2684

[illegible]

US Model
Canadian Model

FM/MW STEREO CASSETTE CORDER

SPECIFICATIONS

Radio section

Frequency range	FM 87.5–108 MHz AM 530–1,605 kHz (566–187 m)
Antennas	FM: Telescopic antenna External antenna terminal AM: Built-in ferrite bar antenna

Tape recorder section and general

Recording system	4-track 2-channel stereo or monaural
Fast winding time	Approx. 1 min. 30 sec. with Sony cassette C-60
Frequency response	30–15,000 Hz (with Sony METALLIC cassette, with the TAPE SELECT switch set to TYPE IV) 30–14,000 Hz (with chromium dioxide cassette, with the TAPE SELECT switch set to TYPE II) 30–13,000 Hz (with standard cassette, with the TAPE SELECT switch set to TYPE I)
S/N ratio	46 dB
Total harmonic distortion	2%
Wow and flutter	0.075% (WRMS)
Speakers	Two-way: Approx. 20 cm (8 inches) dia. woofers Approx. 5 cm (2 inches) dia. tweeters

— Continued on page 2 —

MICROFILM

SERVICE MANUAL

268

Inputs	Two microphone input jacks (minijack) sensitivity 0.3 mV (−68 dB) for low impedance microphone Two line input/phono input jacks (phono jack) with the LINE IN/PHONO selector set to LINE IN: sensitivity 200 mV (−12 dB) input impedance 47 kilohms with the LINE IN/PHONO selector set to PHONO: sensitivity 3 mV (−48 dB) input impedance 27 kilohms Two mixing microphone input jacks (minijack) sensitivity 1.2 mV (−56 dB) for low impedance microphone
Outputs	Two line output jacks (phono jack) load impedance 10 kilohms or higher rated output 0.44 V (−5 dB) at load impedance 47 kilohms Two external speaker jacks (minijack) for 4-ohm or 8-ohm impedance speaker Headphones jack (stereo binaural jack) for 8-ohm impedance headphones

Power requirements	120 V ac, 60 Hz 15 V dc, 10 batteries, size D (IEC designation R20) 12 V car battery with optional Sony DCC-16AW car battery cord
Power consumption	18 W ac (US)/24W ac (Canadian)
Battery life	Approx. 12 hours of continuous recording with the built-in microphones using Eveready No. 1250 Heavy Duty batteries
Dimensions	Approx. 594 × 347 × 169 mm (w/h/d) ($23\frac{1}{2} \times 13\frac{3}{4} \times 6\frac{3}{4}$ inches) incl. projecting parts and controls
Weight	Approx. 10.9 kg (24 lb) incl. batteries
Power output and total harmonic distortion	With 4-ohm loads, both channels driven, from 150–15,000 Hz; rated 4.5 W per channel minimum RMS power, with no more than 10% total harmonic distortion. (US model)
Power output	5.8 W x 2 at 10 % harmonic distortion (Canadian)

TABLE OF CONTENTS

Section *Title* *Page*

1. OUTLINE

1-1. General Description
Location and Function of Controls 3
Playback 6
Microphone Mixing 7
Recording From the Built-in Radio 11
Recording From Various Sound Sources 12

1-2. Operating Description 13

1-3. Block Diagram 17

2. DISASSEMBLY

2-1. Removal 20

2-2. Dial Cord Stringing 23

2-3. Switch Location for Mechanism 25

3. ADJUSTMENTS

3-1. Mechanical Adjustments 26

3-2. Electrical Adjustments 28

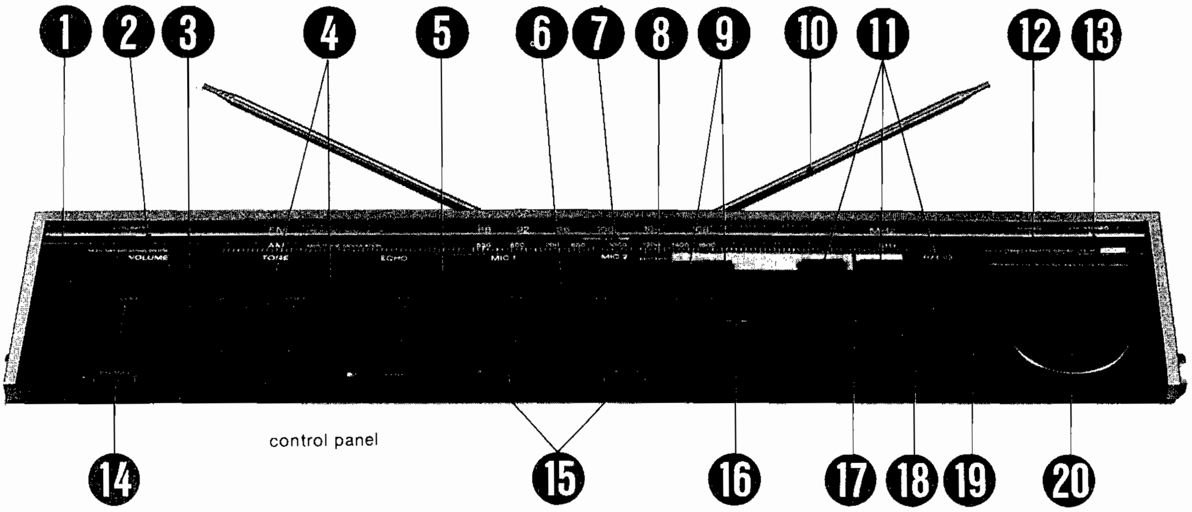
4. DIAGRAMS 36

5. EXPLODED VIEWS AND PARTS LIST 50

SECTION 1
OUTLINE

1-1. GENERAL DESCRIPTION

LOCATION AND FUNCTION OF CONTROLS



❶ **POWER switch:** Depress to turn on the cassette-corder (▬ ON). To turn the cassette-corder off, depress the switch again (⊓ OFF). It is possible to record or playback a tape even when the switch is released (⊓ OFF). With the switch in this position, the cassette-corder will be automatically turned off at the end of the tape.

- Be sure to release the switch (⊓ OFF) when the cassette-corder is not in use.

❷ **OPR/BATT (operation/battery) indicator:** Lights up to show operation. This indicator also shows the battery condition.

❸ **VOLUME control:** Slide upwards for more volume.

❹ **BASS and TREBLE TONE controls:** Adjust the tone quality of the reproduced sound to your preference. Slide the control towards +5 for more bass or treble, and towards −5 for less bass or treble.

❺ **ECHO LEVEL control:** Adjusts the echo level of the microphones connected to the MIX MIC jacks.

❻ **MIC LEVEL controls:** Adjusts the level of the microphones connected to the MIX MIC jacks.

❼ **Dial scale and pointer:** The pointer moves as the tuning knob is turned, indicating the tuned frequency on the dial scale.

❽ **MIC MIX button:** Press this button to mix the microphone inputs with other inputs.

❾ **REC MODE (record mode) selector:** Choose the desired recording system.

AUTO: For automatic level adjustment recording (SONY-MATIC).

MANUAL: For manual level adjustment recording.

❿ **Telescopic antennas:** Used for FM reception.

⓫ **Function select buttons**

TAPE: For playing back the tape or for recording from the built-in microphones or the EXT MIC jacks.

LINE IN/PHONO: For listening to or recording the sound from the LINE IN/PHONO jacks.

RADIO: For listening to or recording radio programs.

⓬ **TUNING indicator:** Lights at correct tuning of radio programs. The indicator might flicker or not light up at all on a very weak signal.

⓭ **FM STEREO indicator:** Lights when an FM stereo program of sufficient signal strength is tuned in.

⓮ **BALANCE control:** Slide to adjust the left and right speaker (or headphones) volume for optimum stereo effect.

⓯ **PAN POT controls:** Slide the controls to position the input of the microphones connected to the MIX MIC jacks between the speakers.

⓰ **REC LEVEL/SOURCE LEVEL (record level/source level) controls:** Adjust the recording level when the MANUAL button is pressed and adjust the level of the sound source when the MIC MIX button is pressed.

⓱ **TAPE SELECT switch:** Set to the proper position for the type of tape to be used in recording.

⓲ **AFC/ISS (automatic frequency control/interference suppress switch):** Used as the automatic frequency control for FM reception or as the interference suppress switch for recording of AM program.

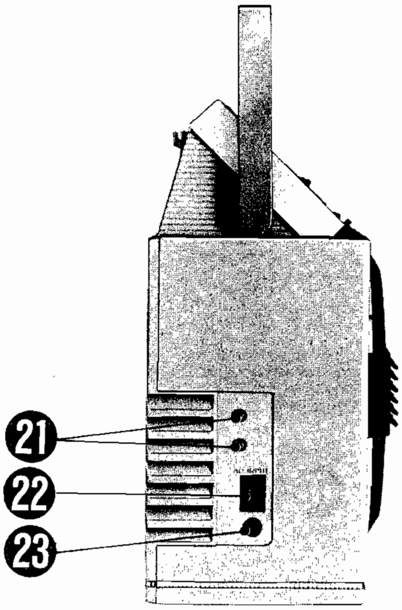
⓳ **BAND SELECT switch:** Choose the desired band.

FM STEREO: For normal FM program reception. The cassette-corder operates in stereo mode for FM stereo programs and will be automatically switched to mono mode for non-stereo FM programs.

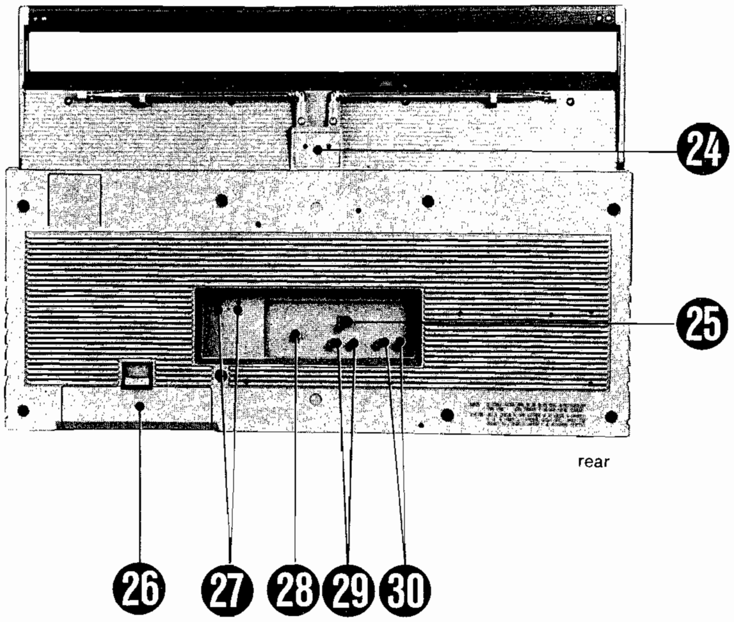
FM: When an FM stereo program is too noisy, use this position. The set will operate in monaural mode regardless of the transmitted FM stereo program.

AM: For AM program reception.

⓴ **TUNING knob:** Turn to select the frequency of the desired station, as marked on the dial scale.



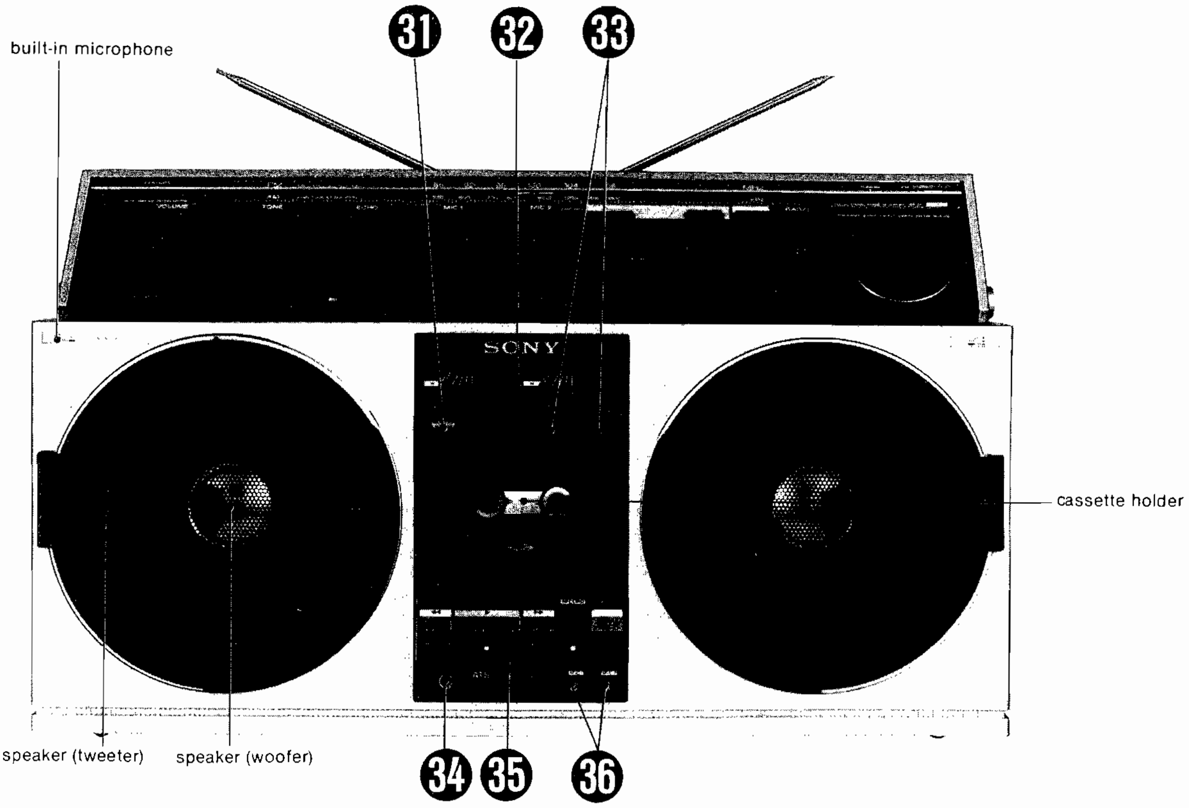
left side



rear

㉑ **EXT SP (external speaker) jacks:** Minijacks for connecting external speakers.
㉒ **AC INPUT socket:** For operation on house current.
㉓ **DC IN 12 V (external input) jack:** For operation on a car battery.

㉔ **EXT ANT (external antenna) jacks:** Connect an FM external antenna using the supplied antenna connector.
㉕ **⏚ (ground) terminal:** For connecting the ground wire of the record player.
㉖ **Battery compartment**
㉗ **EXT MIC (external microphone) jacks:** Minijacks for recording with microphones. For connecting a two-pin plug microphone, use the pin receptacle. The remote control function of the microphone does not operate with this set.
㉘ **LINE IN/PHONO (line input/phono input) selector:** Selects the input from the LINE IN/PHONO jacks. When connecting a record player, set the selector to PHONO. When connecting other equipment, set the selector to LINE IN.
㉙ **LINE IN/PHONO (line input/phono input) jacks:** Phono jacks for listening to or recording from a stereo amplifier, another tape recorder or TV (with the LINE IN/PHONO selector set to LINE IN), or a record player (with the LINE IN/PHONO selector set to PHONO).
㉚ **LINE OUT (line output) jacks:** Phono jacks for playing back a tape or listening to a radio program through a stereo amplifier, or for duplicating a tape onto another tape recorder.



㉛ **EJECT button:** Press to open the cassette holder.

㉜ **Level meters:** The pointers of the meters show the signal level in recording or playback mode, and the input sound level in radio program reception. The LEFT meter shows the level of the left channel and the RIGHT meter, the level of the right channel.

㉝ **Tape counter and reset button:** Use the counter for indexing the tape contents. Before recording, set the counter to 000 by pushing the reset button. The figures of the counter change as the tape passes. Make a note of the figures and the program being recorded. Later on, the desired program can be rapidly located by using the ◀◀ REW or ▶▶ FF button.

㉞ **HEADPHONES jack:** Stereo binaural jack for listening with 8-ohm stereo headphones.

㉟ **Tape operation mode select buttons**

◀◀ REW (rewind): Press to rewind the tape.

▶ FWD (forward): Press for playback.

▶▶ FF (fast forward): Press to advance the tape rapidly.

■ (stop): Press to stop the tape and to release the locked buttons.

RECORD: For recording, keep this button pressed and press the ▶ FWD button.

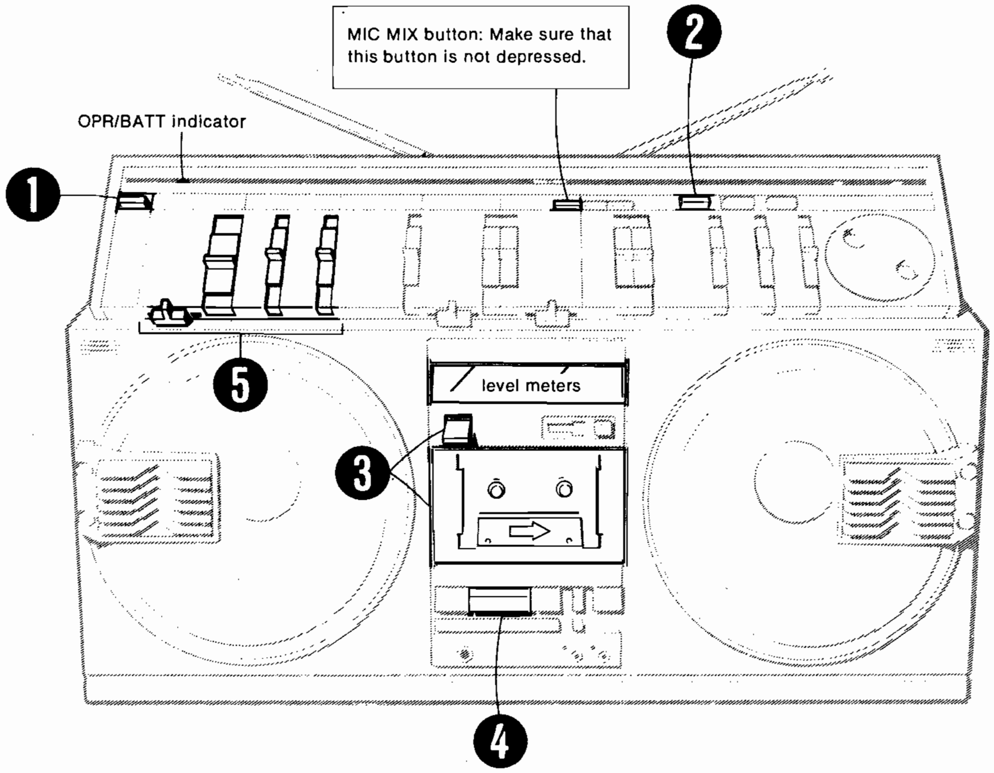
PAUSE: Depress to stop the tape for a moment during recording or playback. To restart, press the button again to release it. To stop the tape for a long time, use the ■ button.

REC MUTE (record muting): Hold this button pressed to eliminate unwanted programs and provide an interspacing during recording. While this button is pressed, the pointers of the level meters do not swing.

㊱ **MIX MIC (mixing microphone input) jacks:** Minijacks for connecting mixing microphones. For connecting a two-pin plug microphone, use the pin receptacle. The remote control function of the microphone does not operate with this set.

PLAYBACK

- The numbers in the illustration refer to the sequence of operations.

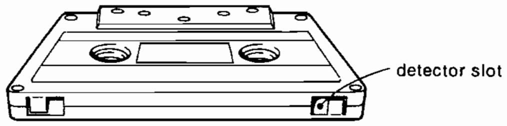

MIC MIX button: Make sure that this button is not depressed.
OPR/BATT indicator
level meters
1
2
3
4
5

❶ Depress the POWER switch (ON).
The OPR/BATT indicator will light up.
❷ Press the TAPE button.
● The TAPE SELECT switch has no effect upon playback (Playback Automatic Tape Selector System).
❸ Insert a cassette. See "CASSETTE INSERTION".
❹ Press the ▶ FWD button. Playback will begin.
● If you press and release the POWER switch at this step, the cassette-corder will be automatically turned off at the end of the tape.
❺ Adjust the volume and tone to your preference.
Adjust the balance of the left and right channels for optimum stereo effect.
● During playback, the pointers of the level meters swing according to the recorded level.

To stop the tape, press the ■ button.
● At the end of the tape, the tape motion stops and the locked button is released automatically.

After you have finished, be sure to press and release the POWER switch to turn off the set.

Playback Automatic Tape Selector (ATS)
When recording, set the TAPE SELECT switch to the position which corresponds to the type of tape being used, since the switch sets the optimum equalization for the tape being used.
When playing back, however, there is no need to set the TAPE SELECT switch, because the Playback Automatic Tape Selector automatically sets the appropriate equalization.
The cassettes of most chromium dioxide and metallic tapes have detector slots next to their safety tabs. The ATS operates by detecting this slot.



● When a chromium dioxide or metallic tape cassette without this detector slot is played back, the ATS does not operate. In this case, adjust the BASS and TREBLE controls as necessary.

All-mode shut-off mechanism
At the end of the tape, the tape motion stops in any operating mode and the locked buttons will be released automatically.
This protects the tapes and prevents undue battery wear. The mechanism activates after about 5 seconds at the end of the tape.

MICROPHONE MIXING

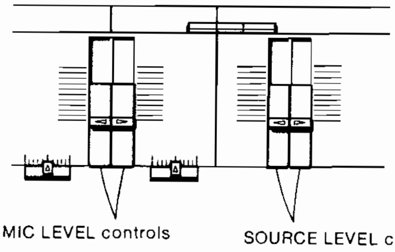
The CFS-99 allows you to mix the sound of external microphones and other sound sources.

NOTES

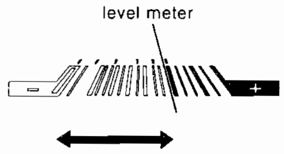
- Make sure that the VOLUME control is not slid fully to "0". In this position, the mixed sound cannot be heard from the speakers, even if you slide the MIC LEVEL controls and SOURCE LEVEL controls fully to "10".
- A howling sound may occur when the microphone is too near the speakers. If this happens, move the microphone away from the speakers or slide the MIC LEVEL controls or VOLUME control slightly towards "0".

HOW TO FINELY-ADJUST THE MIXING LEVEL

❶ Observing the pointers of the level meters, set the microphone level with the MIC LEVEL controls.
If you slide the SOURCE LEVEL controls fully to "0", the pointers only indicate the microphone inputs.
❷ Observing the pointers of the level meters, set the level of the sound source (tape, radio or connected equipment) with the SOURCE LEVEL controls.
❸ Adjust these controls together to get good mixing balance results.
❹ Adjust the overall sound with the VOLUME control.

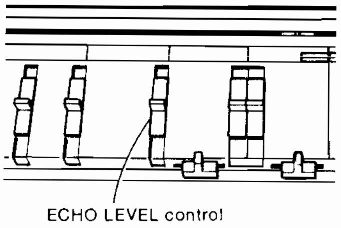


Proper mixing level
Generally, mixing level should be adjusted so that the pointers of the level meters deflect as close as possible to "0" at the highest signal-level passage. The pointers may go over "0" for an instant at the sudden high level bursts, but this is not a problem.



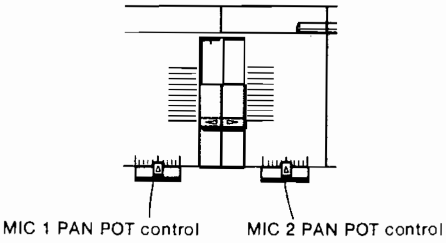
ECHO EFFECT

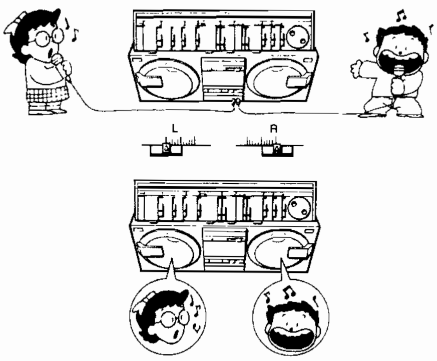
You can add an echo effect to the microphones connected to the MIX MIC jacks. Slide the ECHO LEVEL control upwards for a greater echo effect.
When you are using two microphones, the same amount of echo effect will be added to both microphones.



HOW TO POSITION THE MICROPHONE INPUTS BETWEEN THE RIGHT AND LEFT SPEAKERS — PAN POT

When the PAN POT controls are set to the center position, both microphone inputs are mixed and output at the same level at both speakers. This is the appropriate position for public address. When the MIC 1 PAN POT control is set to "L" and the MIC 2 PAN POT controls is set to "R", the microphone input to the MIC 1 MIX MIC jack is output only by the left speaker and the input to the MIC 2 MIX MIC jack only by the right speaker. This is the position to use for stereo pickup.





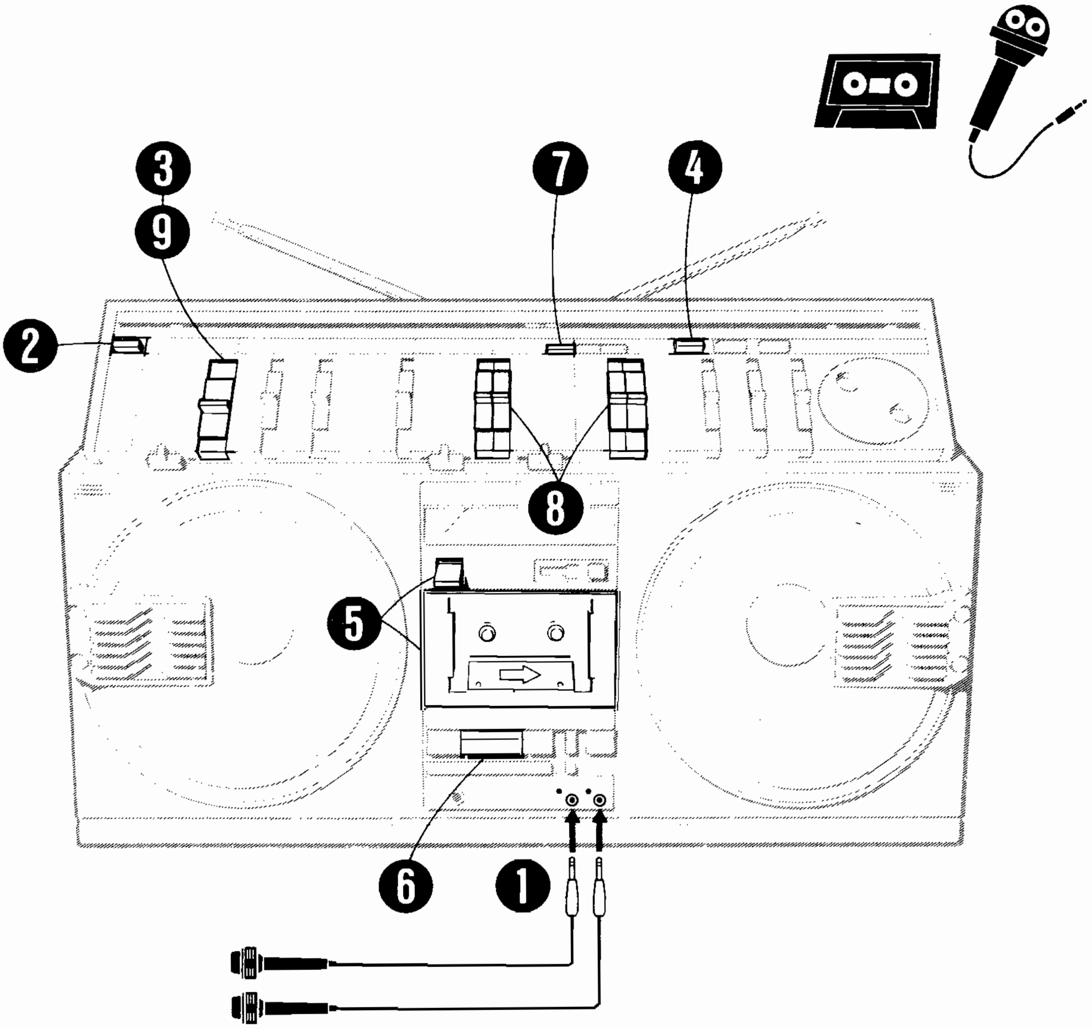
Use these controls to shift the input of the microphones so that the desired portion is output from each speaker.

FADE-IN AND FADE-OUT

You can fade-in and fade-out using the MIC LEVEL and SOURCE LEVEL controls.

RECORDED TAPE PLUS MICROPHONE MIXING ("SING-ALONG")

- The numbers in the illustration refer to the sequence of operations.



❶ Connect the microphone(s) to the MIX MIC jack(s).
❷ Depress the POWER switch (ON).
❸ Set the VOLUME control at "2".
❹ Press the TAPE button.
❺ Insert a cassette. See "CASSETTE INSERTION".
❻ Press the ▶ FWD button. Playback will begin.
❼ Press the MIC MIX button.
❽ Adjust the microphone level with the MIC LEVEL controls.

The MIC 1 LEVEL control adjusts the level of the microphone connected to the MIC 1 MIX MIC jack. The MIC 2 LEVEL control adjusts the level of the microphone connected to the MIC 2 MIX MIC jack.

Adjust the tape level with the SOURCE LEVEL controls.

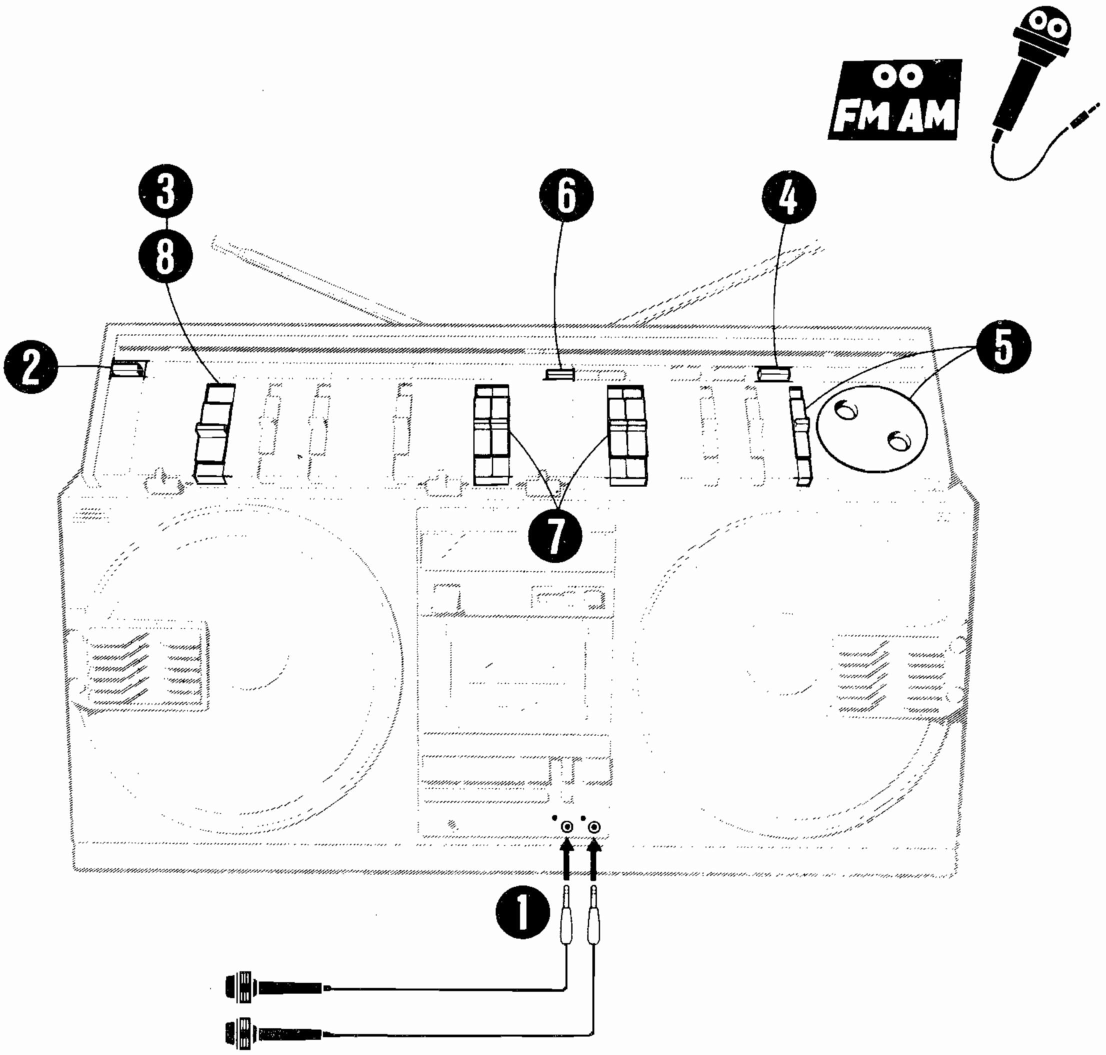
The L control is for the left channel and the R for the right channel.

❾ Adjust the overall sound with the VOLUME control.

- For recording, connect another recorder to the CFS-99 LINE OUT jacks and set the recorder into the record mode.

RADIO PLUS MICROPHONE MIXING

- The numbers in the illustration refer to the sequence of operations.



❶ Connect the microphone(s) to the MIX MIC jack(s).
❷ Depress the POWER switch (ON).
❸ Set the VOLUME control at "2".
❹ Press the RADIO button.
❺ Tune in the desired station.
❻ Press the MIC MIX button.

❼ Adjust the microphone level with the MIC LEVEL controls.

The MIC 1 LEVEL control adjusts the level of the microphone connected to the MIC 1 MIX MIC jack. The MIC 2 LEVEL control adjusts the level of the microphone connected to the MIC 2 MIX MIC jack.

Adjust the radio level with the SOURCE LEVEL controls.

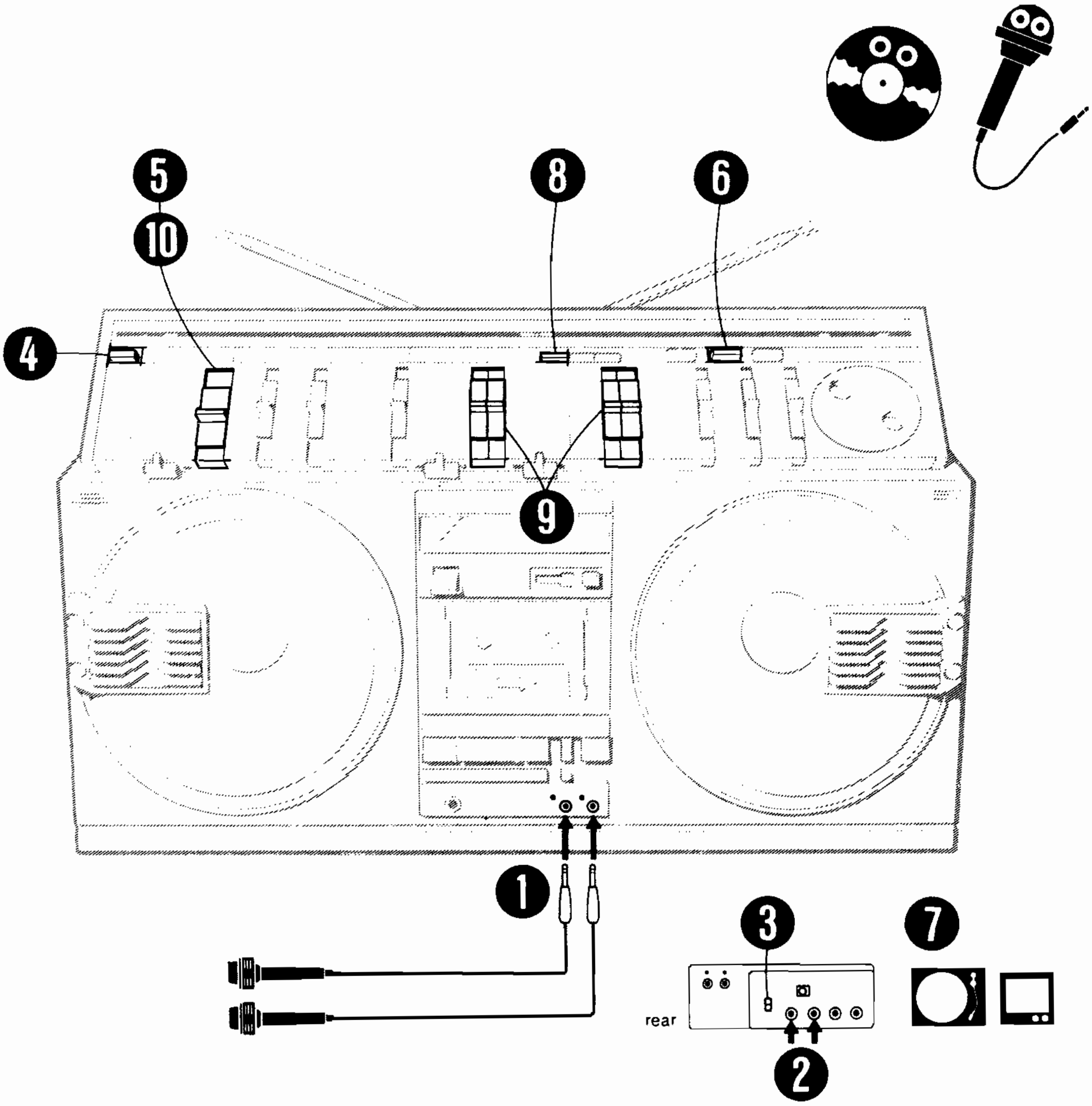
The L control is for the left channel and the R for the right channel.

❽ Adjust the overall sound with the VOLUME control.

- For recording, insert a cassette and press the ▶ FWD button while pressing the RECORD button.

)ISC OR TV PLUS MICROPHONE MIXING

● The numbers in the illustration refer to the sequence of operations.



) Connect the microphone(s) to the MIX MIC jack(s).

) Connect a record player or a TV to the LINE IN/PHONO jacks t the rear.

) Set the LINE IN/PHONO selector to PHONO when a record layer is connected, and set the selector to LINE IN when a TV, tc. is connected.

) Depress the POWER switch (ON).

) Set the VOLUME control at "2".

) Press the LINE IN/PHONO button.

) Play the record or select the desired TV program.

❽ Press the MIC MIX button.

❾ Adjust the microphone level with the MIC LEVEL controls.

The MIC 1 LEVEL control adjusts the level of the microphone connected to the MIC 1 MIX MIC jack. The MIC 2 LEVEL control adjusts the level of the microphone connected to the MIC 2 MIX MIC jack.

Adjust the disc or TV level with the SOURCE LEVEL controls.

The L control is for the left channel and the R for the right channel.

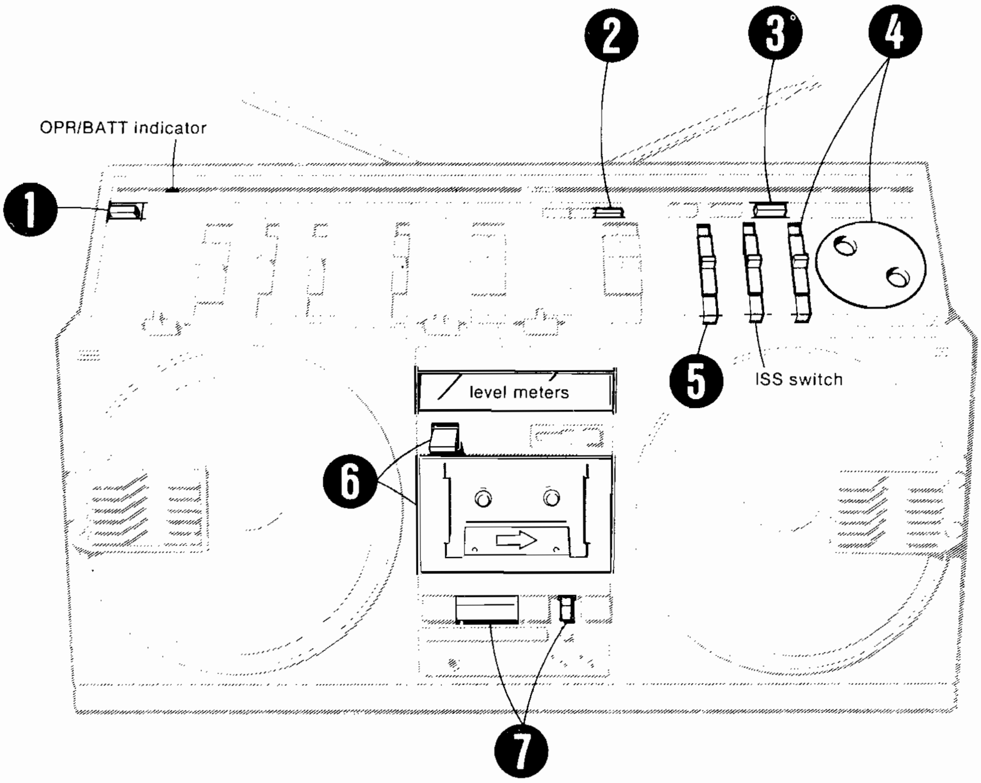
❿ Adjust the overall sound with the VOLUME control.

● For recording, insert a cassette and press the ▶ FWD button while pressing the RECORD button.

RECORDING FROM THE BUILT-IN RADIO

SONY-MATIC RECORDING
When the AUTO button is depressed, the recording level is automatically adjusted and a proper recording level is maintained.

- The numbers in the illustration refer to the sequence of operations.



❶ Depress the POWER switch (ON).
The OPR/BATT indicator will light up.
❷ Press the AUTO button.
❸ Press the RADIO button.
❹ Tune in the desired station.
❺ Set the TAPE SELECT switch to the proper position according to the type of tape to be used.

❻ Insert a cassette.
❼ While pressing the RECORD button, press the ▶ FWD button. Recording will begin.

- If you press and release the POWER switch at this step, the cassette-corder will be automatically turned off at the end of the tape.
- The pointers of the level meters will swing according to the input level.
- The radio sound is heard through the speakers or headphones at any desired volume and tone control settings without affecting the recording level (Variable-Monitor System).

To stop the tape, press the ■ button.

- At the end of the tape, the tape motion stops and the locked buttons are released automatically.

When the recording is completed, press and release the POWER switch to turn off the set.

Note: Make sure that the BAND SELECT switch is set to FM STEREO for recording FM stereo programs. Otherwise, the programs will be recorded in mono mode.

To hear the program just recorded
1. Press the TAPE button.
2. Press the ◀◀ REW button to rewind the tape.
3. Press the ▶ FWD button. Playback will begin.

RECORDING FROM VARIOUS SOUND SOURCES

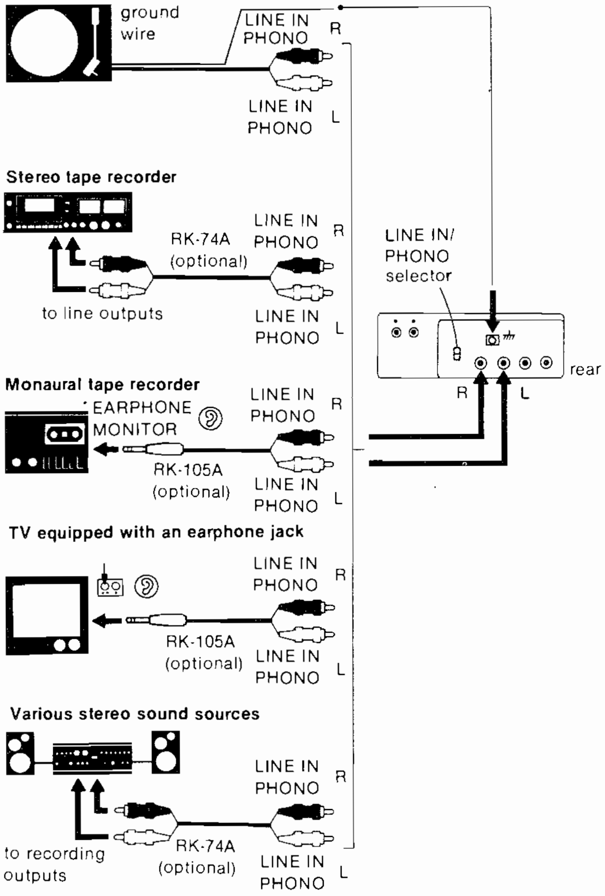
Various sound sources can be connected to the proper cassette-corder jacks by using an appropriate optional connecting cord.

Notes on connection

- When interconnecting electronic equipment with the CFS-99, there are certain conditions that should be observed. In general, the output impedance of a signal source should be much lower than the input impedance of the device to be connected to the signal source. The output level of a signal source should be equal to or slightly higher than the rated sensitivity of the other device. These specifications, both for Sony and other makes of equipment may be found in the instruction manual of the particular piece of equipment.
- Turn off the CFS-99, amplifier, and other connected devices before making connections.
- Insert the cable connectors fully into the jacks.
Loose connections may cause hum and noise.
- The red plug of the connecting cord should be connected to the right channel and the other plug to the left channel.
- If your radio, TV, etc., is not a Sony product, refer to the instruction manual of that set.

LISTENING AND/OR RECORDING OF THE SOUND FROM OTHER EQUIPMENT

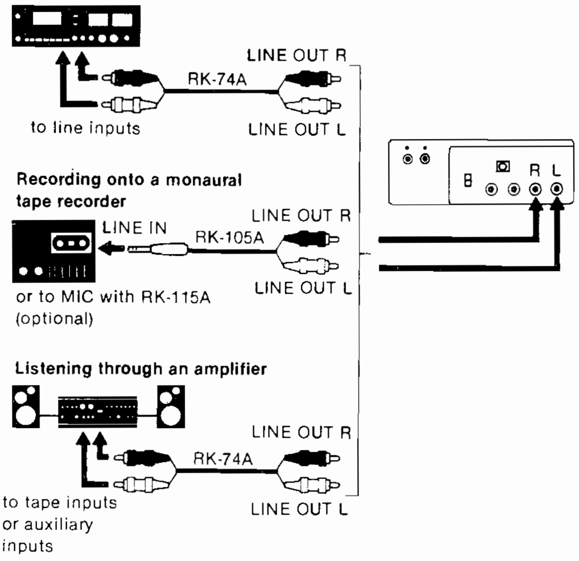
Record player equipped with a magnetic cartridge with a 3 to 5 mV output


ground wire
LINE IN PHONO R
LINE IN PHONO L
Stereo tape recorder
RK-74A (optional)
LINE IN PHONO R
to line outputs
LINE IN PHONO L
LINE IN/ PHONO selector
rear
R
L
Monaural tape recorder
EARPHONE
MONITOR
LINE IN PHONO R
RK-105A (optional)
LINE IN PHONO L
TV equipped with an earphone jack
LINE IN PHONO R
RK-105A (optional)
LINE IN PHONO L
Various stereo sound sources
LINE IN PHONO R
to recording outputs
RK-74A (optional)
LINE IN PHONO L

❶ Connect equipment as illustrated above.
❷ Set the LINE IN/PHONO selector to PHONO for a record player, or to LINE IN for the other equipment.
❸ Press the POWER switch (ON) and the LINE IN/PHONO button on the control panel.
❹ Turn on the connected equipment. Its volume and tone control settings have no effect on the recording.
The sound from the connected equipment can be heard through the speakers or headphones.
❺ To record, insert a cassette and press the ▶ FWD button while pressing the RECORD button.
For automatic recording, press the AUTO button.
For manual recording, press the MANUAL button.

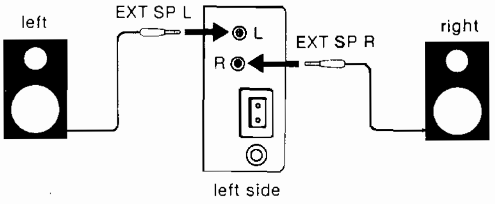
LISTENING THROUGH OR RECORDING ONTO OTHER EQUIPMENT

Recording onto a stereo tape recorder


LINE OUT R
RK-74A
to line inputs
LINE OUT L
R L
Recording onto a monaural tape recorder
LINE IN
LINE OUT R
RK-105A
or to MIC with RK-115A (optional)
LINE OUT L
Listening through an amplifier
LINE OUT R
RK-74A
to tape inputs or auxiliary inputs
LINE OUT L

❶ Connect equipment to the LINE OUT jacks.
❷ Play back a tape or tune in the desired station on the CFS-99.
❸ Turn on the connected equipment and set it to the record mode or listening mode, as required.

Listening through external speakers

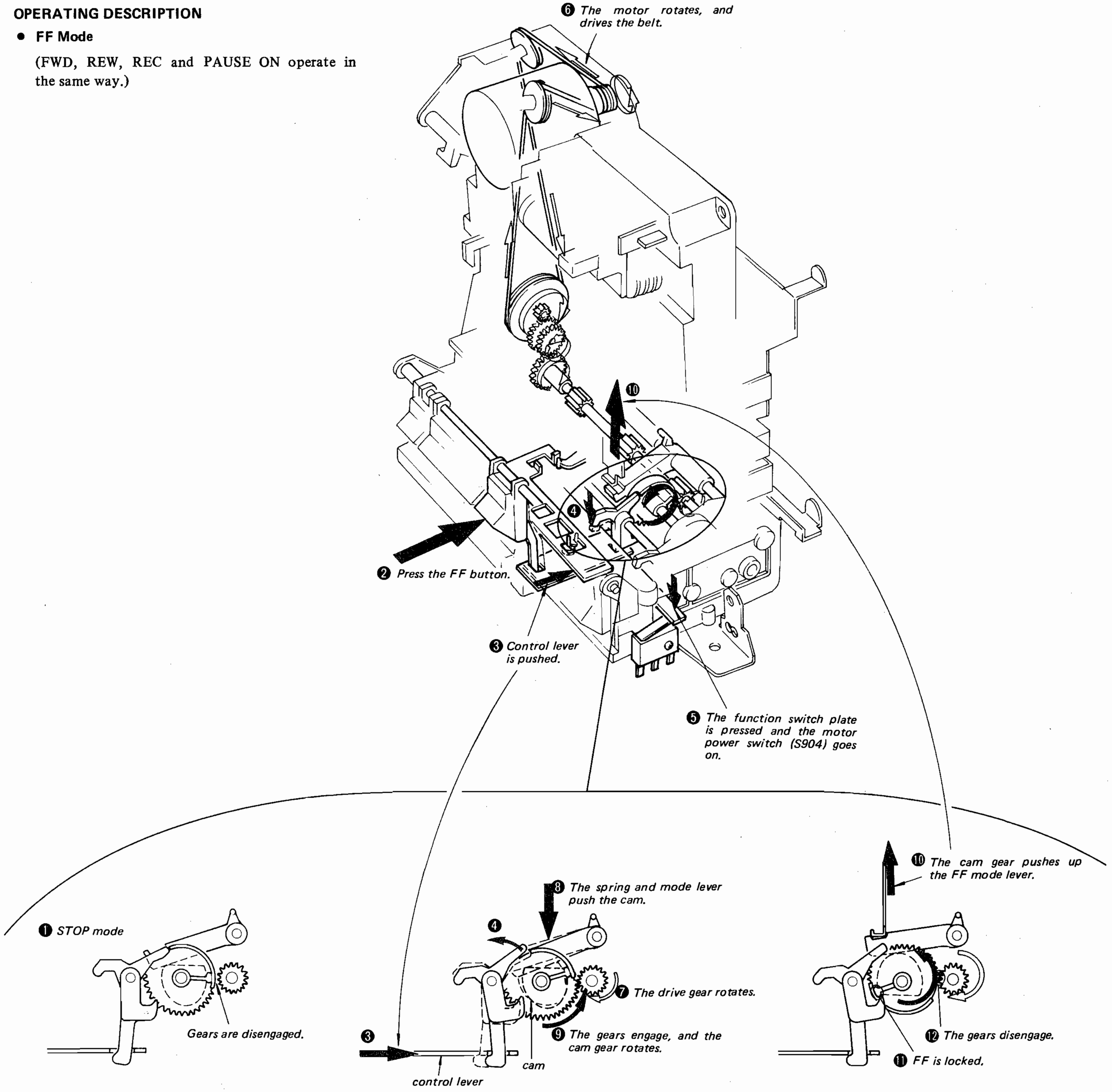

left
EXT SP L
L
EXT SP R
R
right
left side

- When external speakers are connected, the built-in speakers are automatically disconnected.
- Make sure that headphones are disconnected from the cassette-corder.

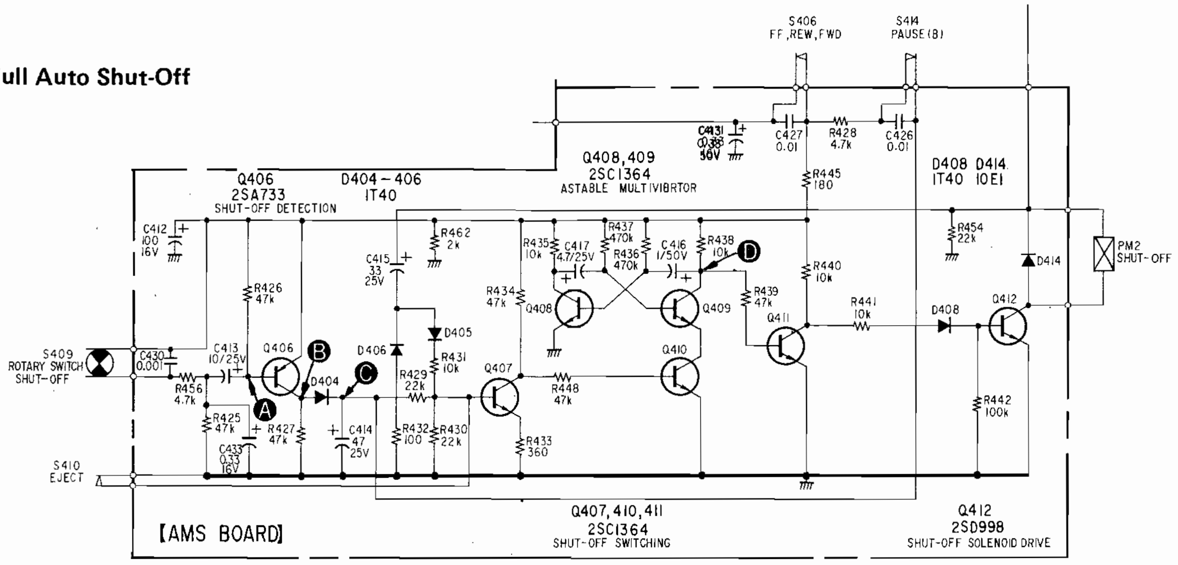
1-2. OPERATING DESCRIPTION

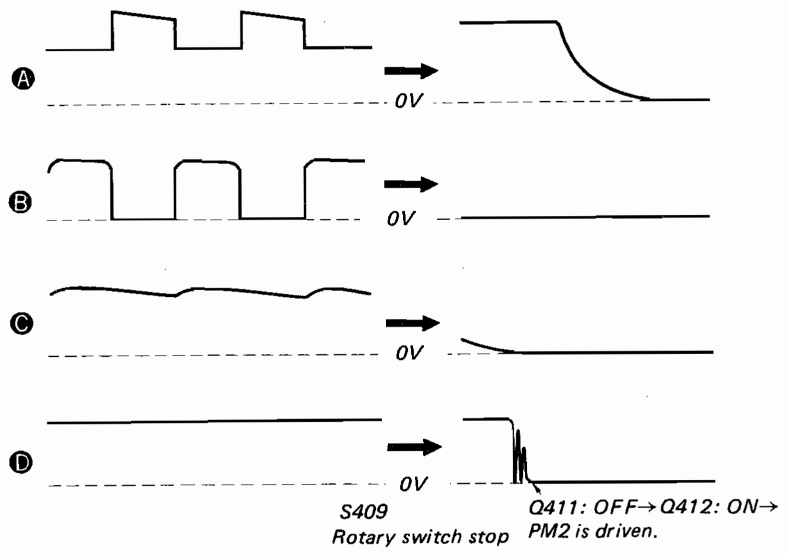
- **FF Mode**

(FWD, REW, REC and PAUSE ON operate in the same way.)


⑥ The motor rotates, and drives the belt.
⑩
④
② Press the FF button.
③ Control lever is pushed.
⑤ The function switch plate is pressed and the motor power switch (S904) goes on.
① STOP mode
Gears are disengaged.
⑧ The spring and mode lever push the cam.
④
⑦ The drive gear rotates.
⑨ The gears engage, and the cam gear rotates.
③
control lever
cam
⑩ The cam gear pushes up the FF mode lever.
⑫ The gears disengage.
⑪ FF is locked.

- **Full Auto Shut-Off**


S406 FF,REW,FWD
S414 PAUSE (B)
C431 0.33 50V
C427 0.01
R428 4.7k
C426 0.01
Q408,409 2SC1364 ASTABLE MULTIVIBRATOR
R445 180
D408 D414 1T40 10E1
Q406 2SA733 SHUT-OFF DETECTION
D404-406 1T40
C412 100 16V
R462 2k
R435 10k
C417 4.7/25V
R437 470k
R436 470k
C416 1/50V
R438 10k
R440 10k
R454 22k
PM2 SHUT-OFF
D414
R426 47k
C415 33 25V
R434 47k
Q408
Q409
R439 47k
Q411
R441 10k
D408
Q412
S409 ROTARY SWITCH SHUT-OFF
C430 0.001
C413 10/25V
Q406
D406
D405
R431 10k
Q410
R456 4.7k
D404
R429 22k
Q407
R448 47k
R442 100k
R425 47k
R427 47k
C414 47 25V
R432 100
R430 22k
C433 0.33 16V
R433 360
S410 EJECT
[AMS BOARD]
Q407,410,411 2SC1364 SHUT-OFF SWITCHING
Q412 2SD998 SHUT-OFF SOLENOID DRIVE

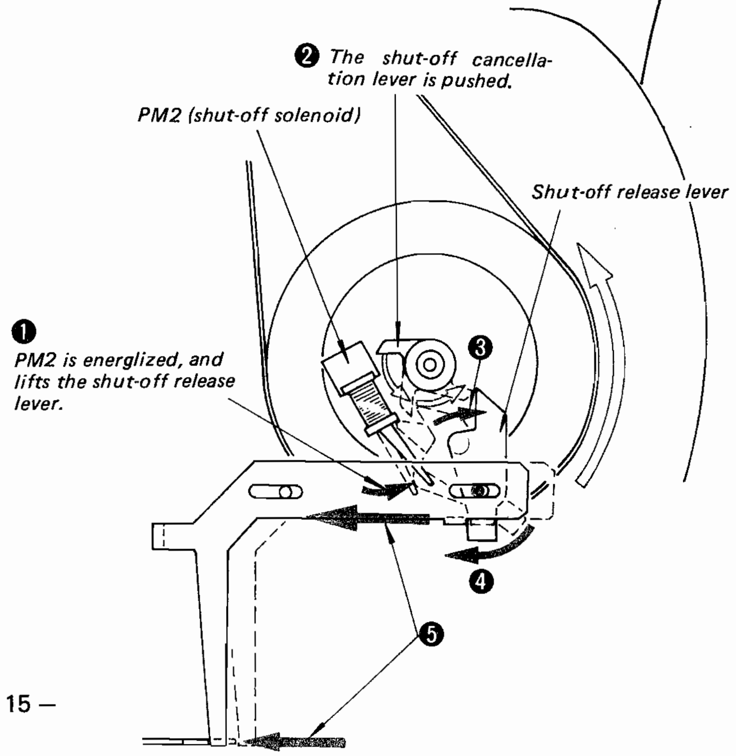


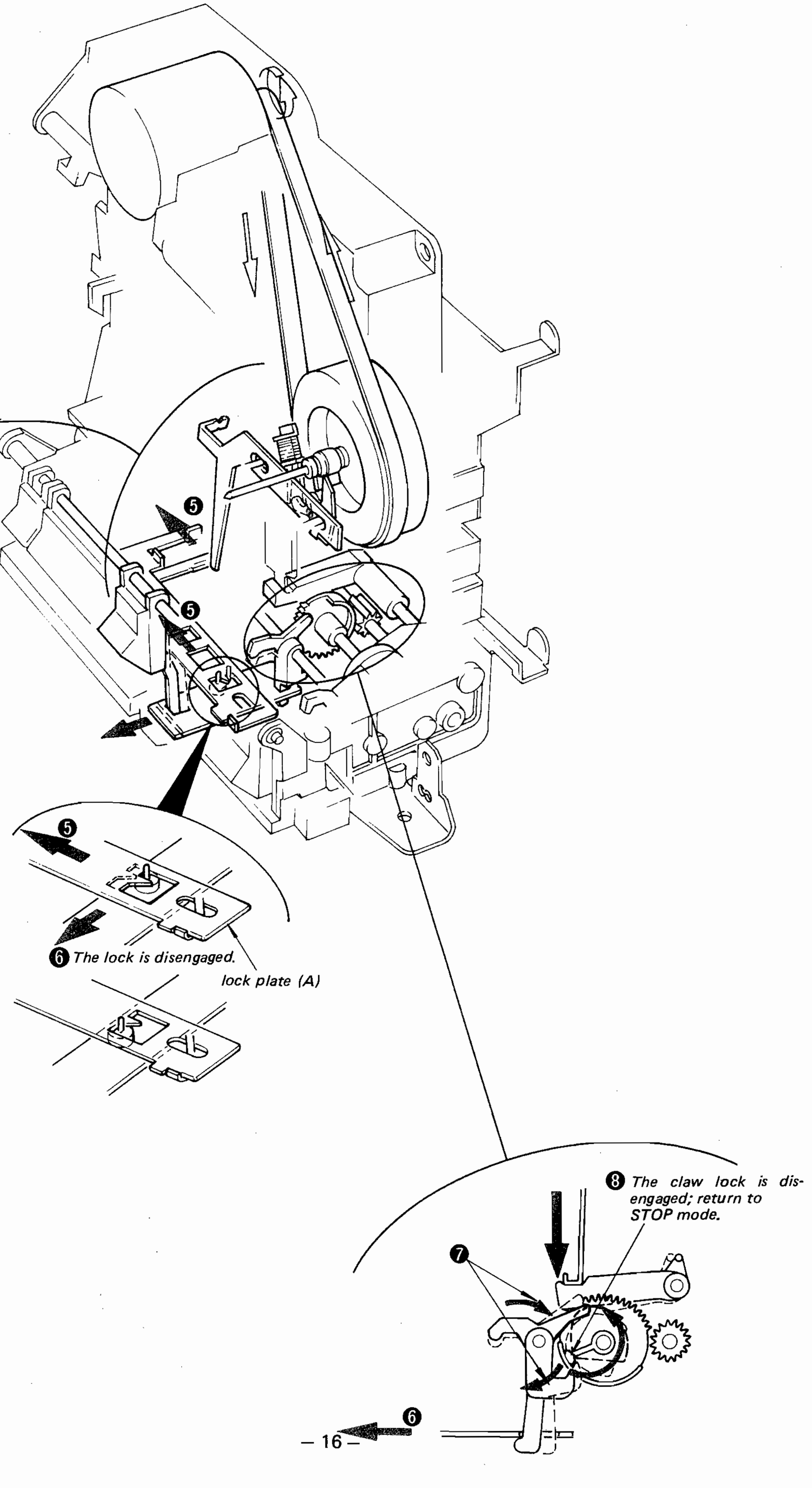
During FWD, REC, FF or REW, the rotary switch is turned on and off by the rotation of the tape counter pulley. Because of this, Q406 goes on and off simultaneously and voltage is generated at points Ⓐ – Ⓓ. When the reel table stops rotating at tape end, the tape counter also stops, and the rotary switch remains at either ON or OFF. In either case, the base potential of Q406 rises and Q406 goes off.

When the voltage at Ⓒ drops below a certain point, Q407 goes off, Q410 goes on, and the astable multivibrator begins to oscillate. This signal turns on Q412 and drives PM2.

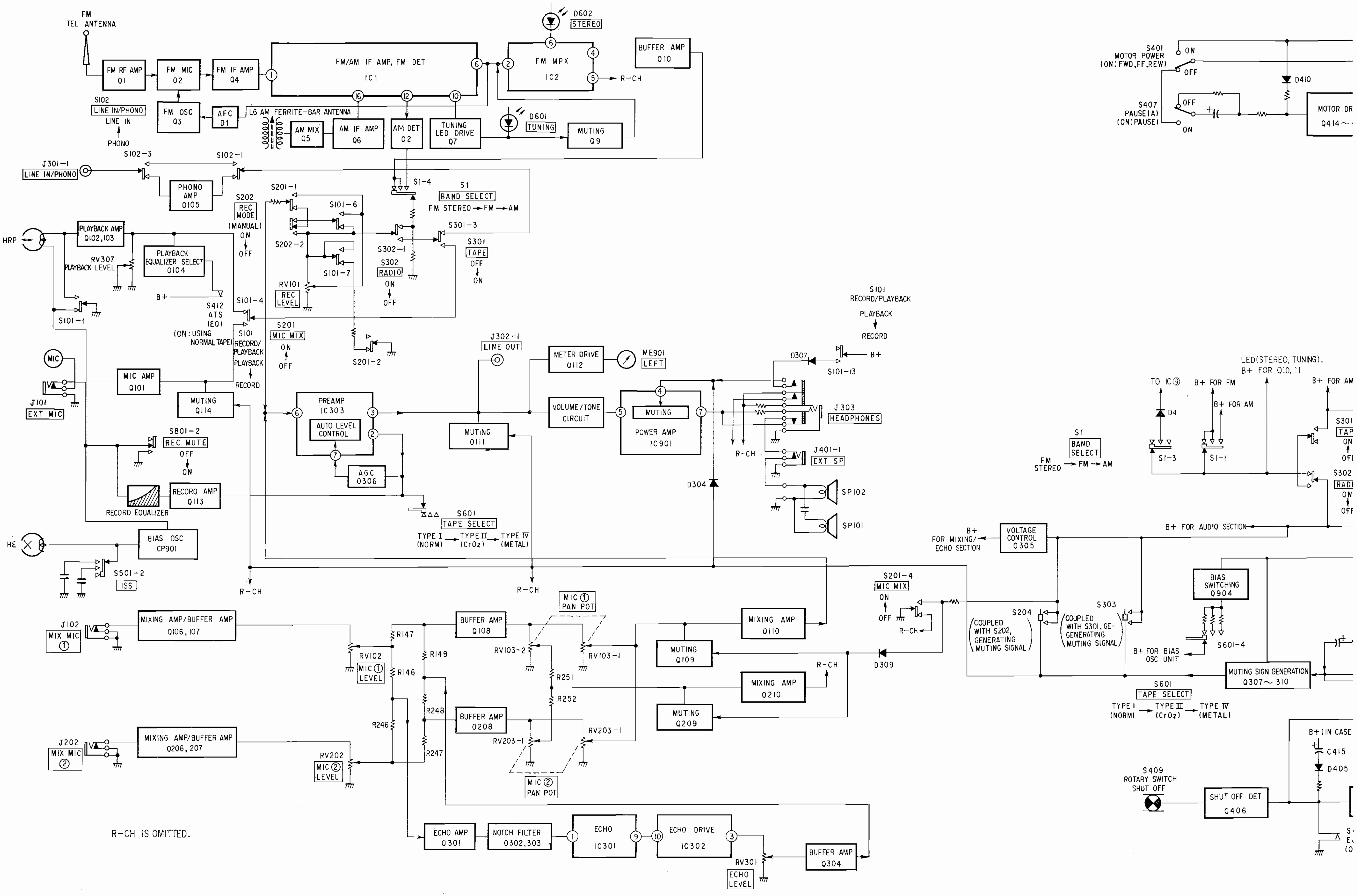
At this point, Q407 is forced ON by S414 (PAUSE B) to prevent shut-off during pause operation. S410 (EJECT) goes on when the EJECT button is pushed, and causes shut-off.

When S401 (motor power supply) is on, the B+ signal passes through D405 and is applied to the base of Q407 to prevent shut-off. After PM2 (shut-off solenoid) is driven, the operations ending in shut-off occur in the following order.

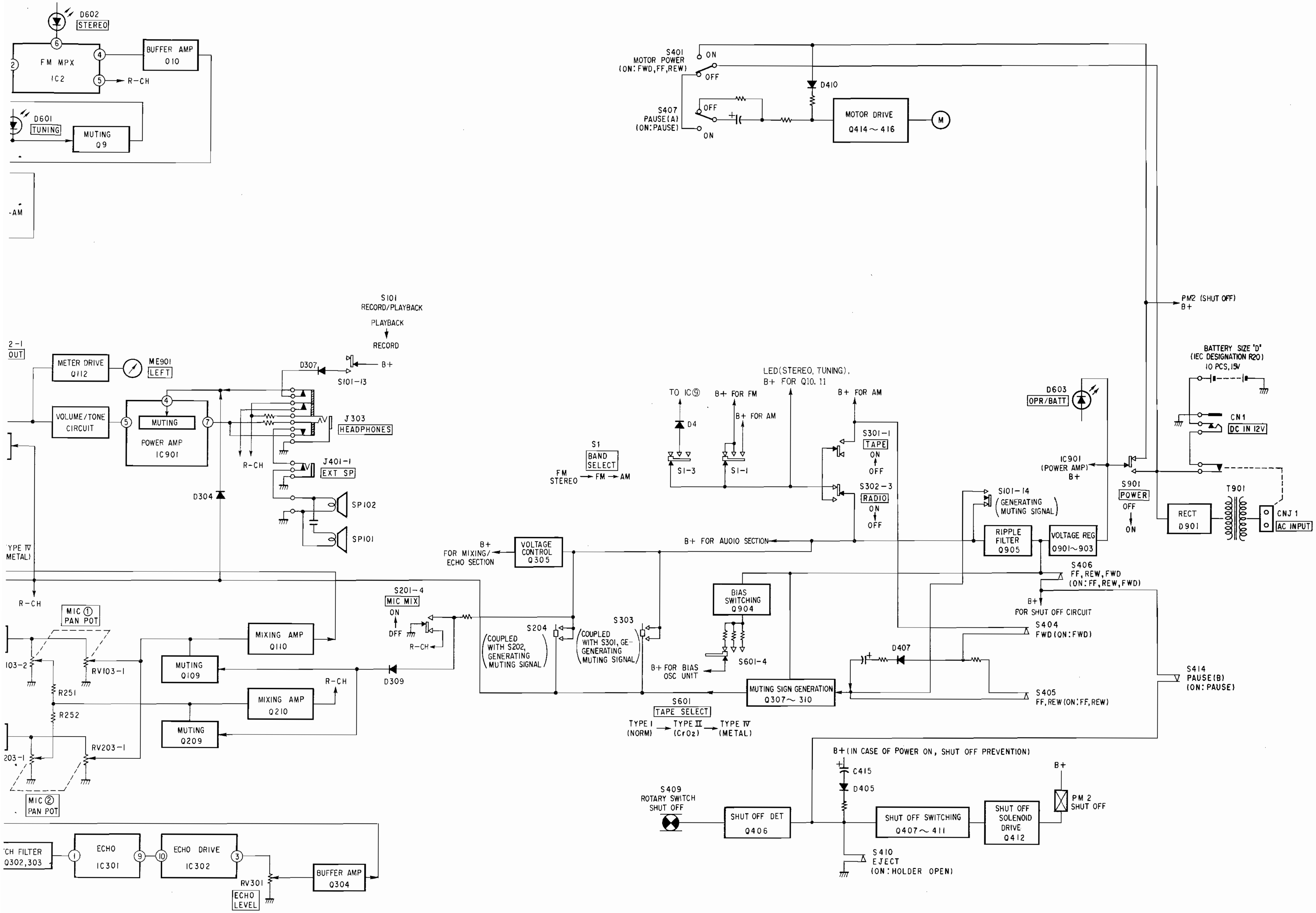

❷ The shut-off cancellation lever is pushed.
PM2 (shut-off solenoid)
Shut-off release lever
❶ PM2 is energlized, and lifts the shut-off release lever.
❸
❹
❺


❺
❺
❺
❻ The lock is disengaged.
lock plate (A)
❽ The claw lock is disengaged; return to STOP mode.
❼
❻

1-3. BLOCK DIAGRAM


FM TEL ANTENNA
FM RF AMP Q1
FM MIC Q2
FM IF AMP Q4
FM/AM IF AMP, FM DET IC1
FM OSC Q3
AFC D1
S102 LINE IN/PHONO
LINE IN
PHONO
L6 AM FERRITE-BAR ANTENNA
AM MIX Q5
AM IF AMP Q6
AM DET Q2
TUNING LED DRIVE Q7
D602 STEREO
FM MPX IC2
BUFFER AMP Q10
R-CH
D601 TUNING
MUTING Q9
S102-3
S102-1
J301-1 LINE IN/PHONO
PHONO AMP Q105
S1-4
S1 BAND SELECT
FM STEREO → FM → AM
S201-1
S101-6
S202 REC MODE (MANUAL) ON OFF
S202-2
S301-3
S301 TAPE OFF ON
S302-1
S302 RADIO ON OFF
S101-7
RV101 REC LEVEL
HRP
PLAYBACK AMP Q102,103
RV307 PLAYBACK LEVEL
PLAYBACK EQUALIZER SELECT Q104
B+
S412 ATS (EQ) (ON: USING NORMAL TAPE)
S101-4
S101-1
S101 RECORD/PLAYBACK
PLAYBACK
RECORD
S201 MIC MIX ON OFF
S201-2
MIC
J101 EXT MIC
MIC AMP Q101
MUTING Q114
PREAMP IC303
AUTO LEVEL CONTROL
AGC Q306
S801-2 REC MUTE OFF ON
RECORD AMP Q113
RECORD EQUALIZER
S601 TAPE SELECT
TYPE I (NORM) → TYPE II (CrO2) → TYPE IV (METAL)
HE
BIAS OSC CP901
S501-2 ISS
R-CH
J302-1 LINE OUT
MUTING Q111
METER DRIVE Q112
ME901 LEFT
VOLUME/TONE CIRCUIT
MUTING
POWER AMP IC901
S101 RECORD/PLAYBACK
PLAYBACK
RECORD
D307
S101-13
B+
J303 HEADPHONES
J401-1 EXT SP
SP102
SP101
D304
R-CH
J102 MIX MIC ①
MIXING AMP/BUFFER AMP Q106, 107
RV102 MIC ① LEVEL
R147
R148
R146
R246
R248
R247
BUFFER AMP Q108
MIC ① PAN POT
RV103-2
RV103-1
R251
R252
BUFFER AMP Q208
RV203-1
RV203-1
MIC ② PAN POT
J202 MIX MIC ②
MIXING AMP/BUFFER AMP Q206, 207
RV202 MIC ② LEVEL
MUTING Q109
MIXING AMP Q110
MIXING AMP Q210
MUTING Q209
R-CH
D309
S201-4 MIC MIX ON OFF
R-CH
ECHO AMP Q301
NOTCH FILTER Q302,303
ECHO IC301
ECHO DRIVE IC302
RV301 ECHO LEVEL
BUFFER AMP Q304
B+ FOR MIXING/ECHO SECTION
VOLTAGE CONTROL Q305
S204 (COUPLED WITH S202, GENERATING MUTING SIGNAL)
S303 (COUPLED WITH S301, GE-GENERATING MUTING SIGNAL)
B+ FOR AUDIO SECTION
BIAS SWITCHING Q904
S601-4
B+ FOR BIAS OSC UNIT
MUTING SIGN GENERATION Q307~310
S601 TAPE SELECT
TYPE I (NORM) → TYPE II (CrO2) → TYPE IV (METAL)
S1 BAND SELECT
FM STEREO → FM → AM
TO IC⑨
B+ FOR FM
B+ FOR AM
D4
S1-3
S1-1
LED(STEREO, TUNING), B+ FOR Q10, 11
S301 TAP ON OFF
S302 RAD ON OFF
S401 MOTOR POWER (ON: FWD,FF,REW) ON OFF
D410
S407 PAUSE(A) (ON:PAUSE) OFF ON
MOTOR DR Q414~
B+(IN CASE
C415
D405
S409 ROTARY SWITCH SHUT OFF
SHUT OFF DET Q406

R-CH IS OMITTED.


D602
STEREO
FM MPX
IC2
BUFFER AMP
Q10
R-CH
D601
TUNING
MUTING
Q9
-AM
2-1
OUT
METER DRIVE
Q112
ME901
LEFT
VOLUME/TONE
CIRCUIT
MUTING
POWER AMP
IC901
D307
S101-13
B+
S101
RECORD/PLAYBACK
PLAYBACK
RECORD
J303
HEADPHONES
R-CH
J401-1
EXT SP
D304
SP102
SP101
TYPE IV
METAL)
R-CH
MIC ①
PAN POT
103-2
RV103-1
R251
R252
MIXING AMP
Q110
MUTING
Q109
MIXING AMP
Q210
MUTING
Q209
R-CH
203-1
RV203-1
MIC ②
PAN POT
CH FILTER
Q302,303
ECHO
IC301
ECHO DRIVE
IC302
RV301
ECHO
LEVEL
BUFFER AMP
Q304
S201-4
MIC MIX
ON
OFF
R-CH
D309
B+
FOR MIXING/
ECHO SECTION
VOLTAGE
CONTROL
Q305
S204
(COUPLED WITH S202, GENERATING MUTING SIGNAL)
S303
(COUPLED WITH S301, GE- GENERATING MUTING SIGNAL)
S1
BAND
SELECT
FM
STEREO
FM
AM
TO IC⑨
B+ FOR FM
B+ FOR AM
D4
S1-3
S1-1
LED(STEREO, TUNING),
B+ FOR Q10, 11
B+ FOR AM
S301-1
TAPE
ON
OFF
S302-3
RADIO
ON
OFF
B+ FOR AUDIO SECTION
BIAS
SWITCHING
Q904
S601-4
B+ FOR BIAS
OSC UNIT
S601
TAPE SELECT
TYPE I
(NORM)
TYPE II
(CrO2)
TYPE IV
(METAL)
MUTING SIGN GENERATION
Q307~310
D407
S401
MOTOR POWER
(ON: FWD, FF, REW)
ON
OFF
S407
PAUSE(A)
(ON: PAUSE)
OFF
ON
D410
MOTOR DRIVE
Q414~416
M
PM2 (SHUT OFF)
B+
BATTERY SIZE 'D'
(IEC DESIGNATION R20)
10 PCS, 15V
CN1
DC IN 12V
D603
OPR/BATT
IC901
(POWER AMP)
B+
S901
POWER
OFF
ON
T901
RECT
D901
CNJ1
AC INPUT
S101-14
(GENERATING MUTING SIGNAL)
RIPPLE
FILTER
Q905
VOLTAGE REG
Q901~903
S406
FF, REW, FWD
(ON: FF, REW, FWD)
B+
FOR SHUT OFF CIRCUIT
S404
FWD(ON: FWD)
S405
FF, REW(ON: FF, REW)
S414
PAUSE(B)
(ON: PAUSE)
B+(IN CASE OF POWER ON, SHUT OFF PREVENTION)
C415
D405
S409
ROTARY SWITCH
SHUT OFF
SHUT OFF DET
Q406
SHUT OFF SWITCHING
Q407~411
SHUT OFF
SOLENOID
DRIVE
Q412
B+
PM2
SHUT OFF
S410
EJECT
(ON: HOLDER OPEN)

SECTION 2
DISASSEMBLY

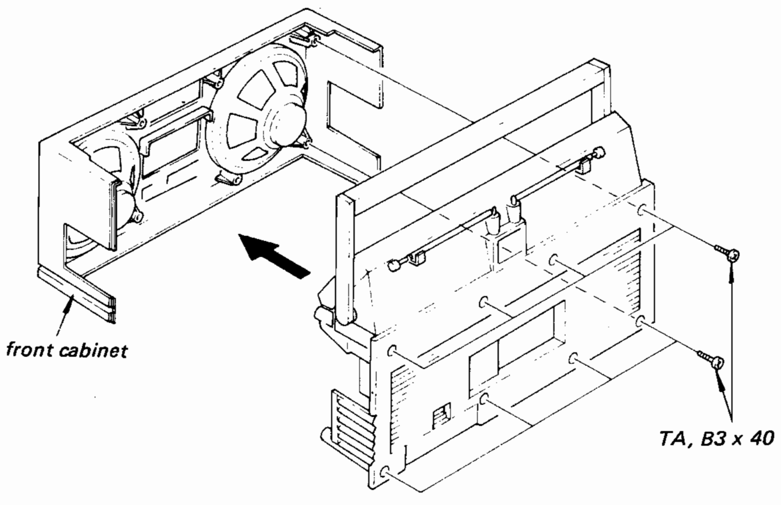
2-1. REMOVAL

Note: Follow the disassembly procedure in the numerical order given.

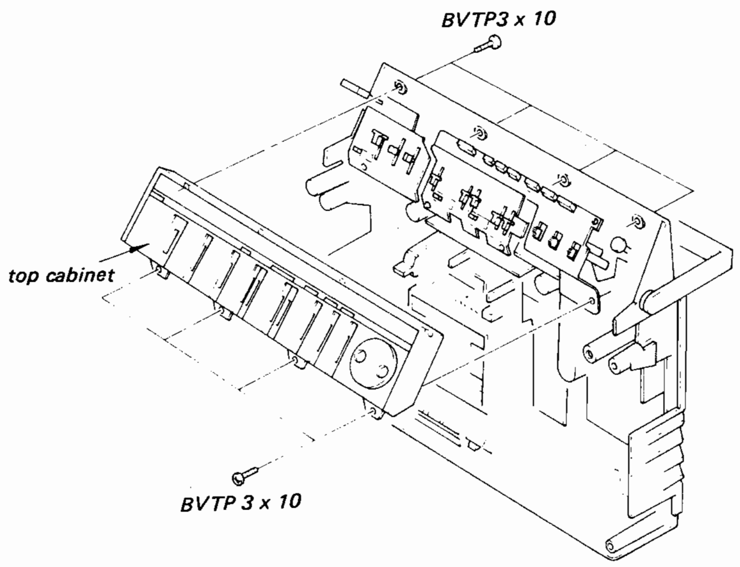
CASSETTE WINDOW

Press the EJECT button and remove the cassette window.

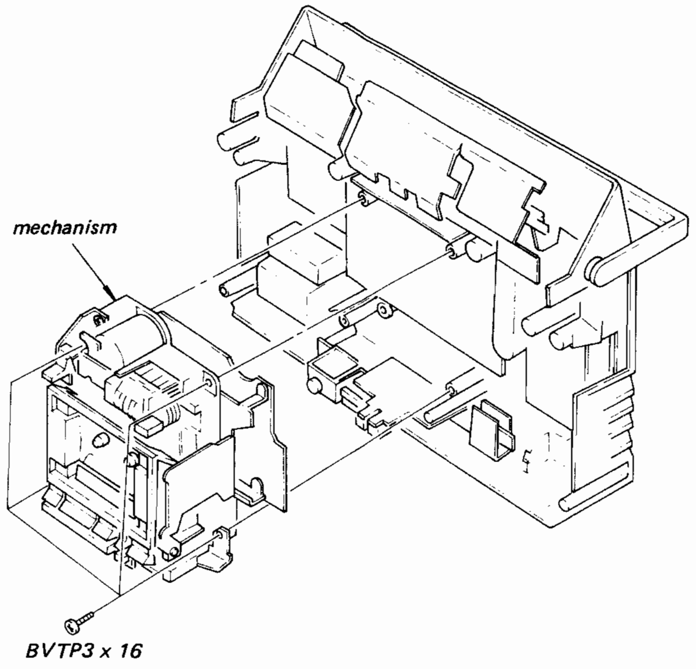
FRONT CABINET


front cabinet
TA, B3 x 40

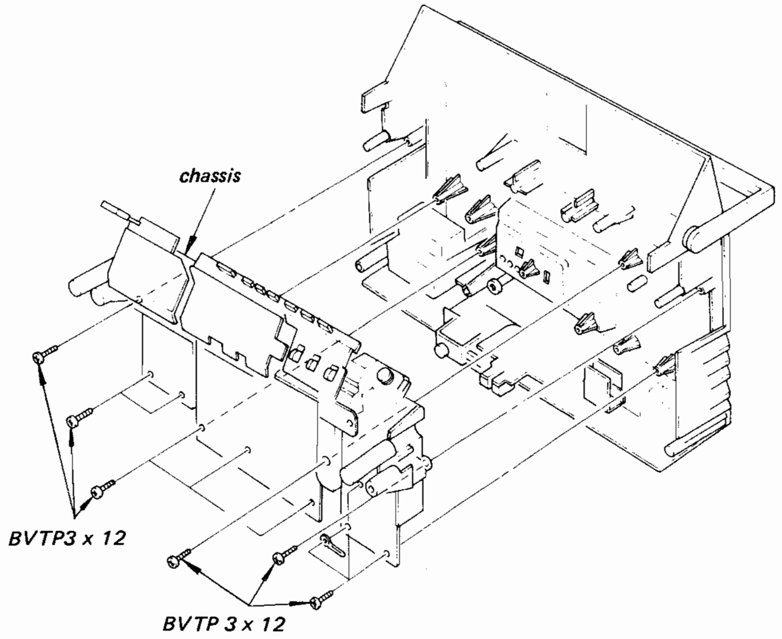
TOP CABINET


BVTP3 x 10
top cabinet
BVTP 3 x 10

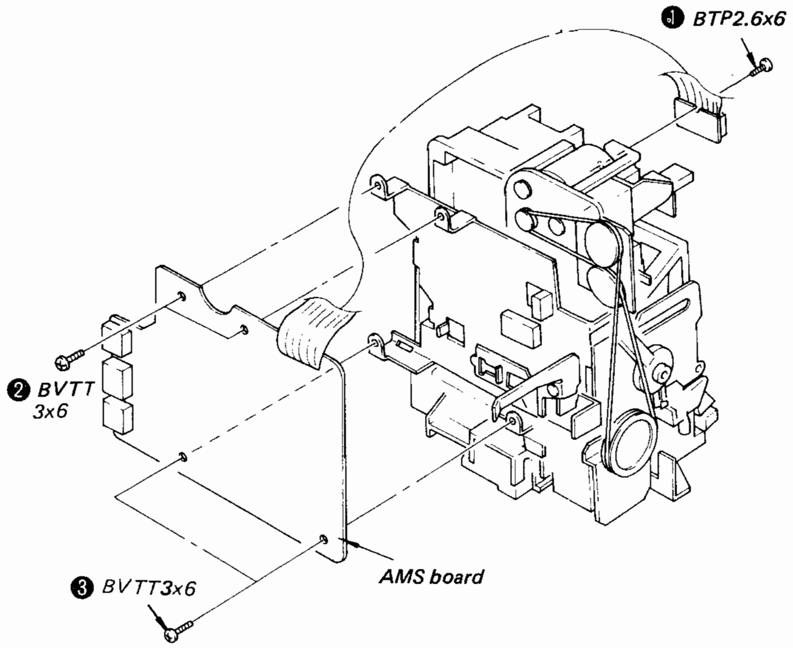
MECHANISM


mechanism
BVTP3 x 16

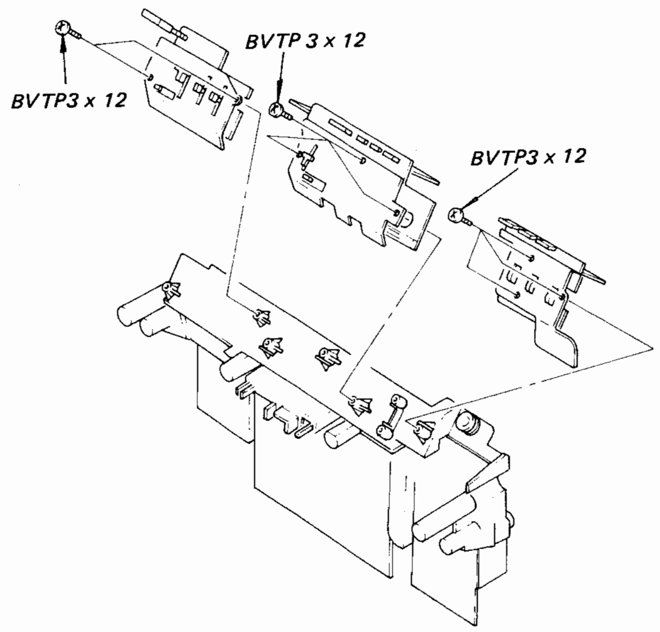
CHASSIS


chassis
BVTP3 x 12
BVTP 3 x 12

AMS BOARD

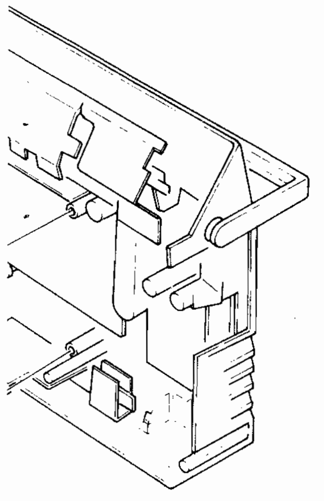

❶ BTP2.6x6
❷ BVTT 3x6
❸ BVTT3x6
AMS board

PC BOARDS ON CHASSIS

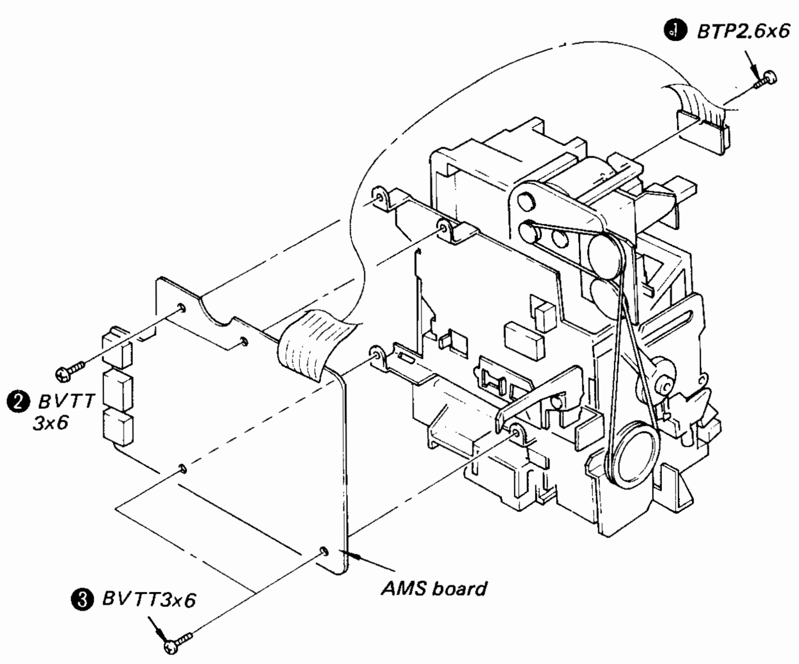

BVTP3 x 12
BVTP 3 x 12
BVTP3 x 12

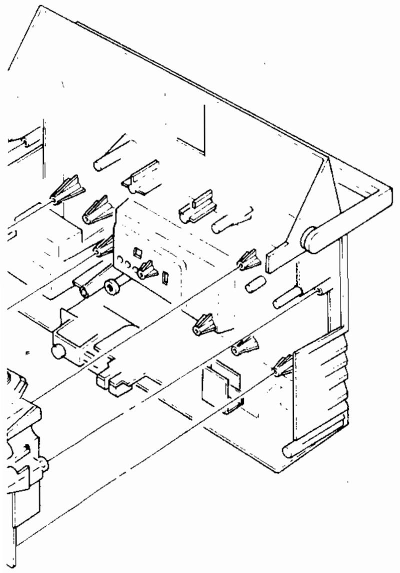
THRUS

❷ PT
2.

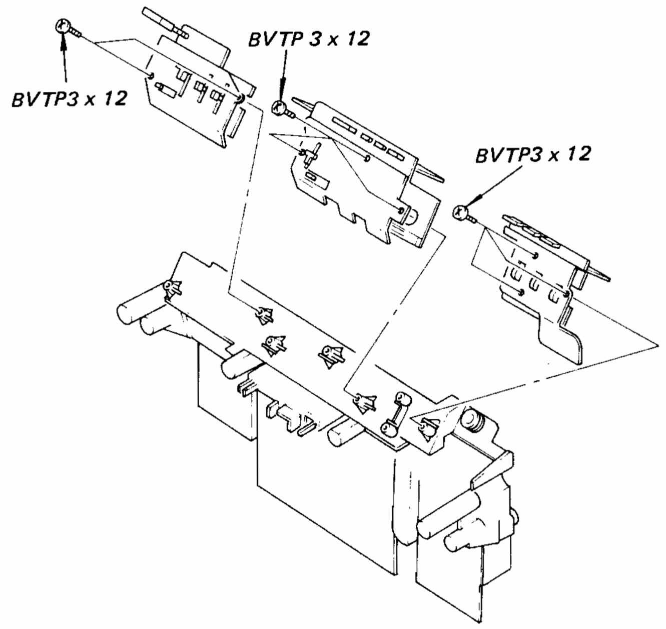


AMS BOARD

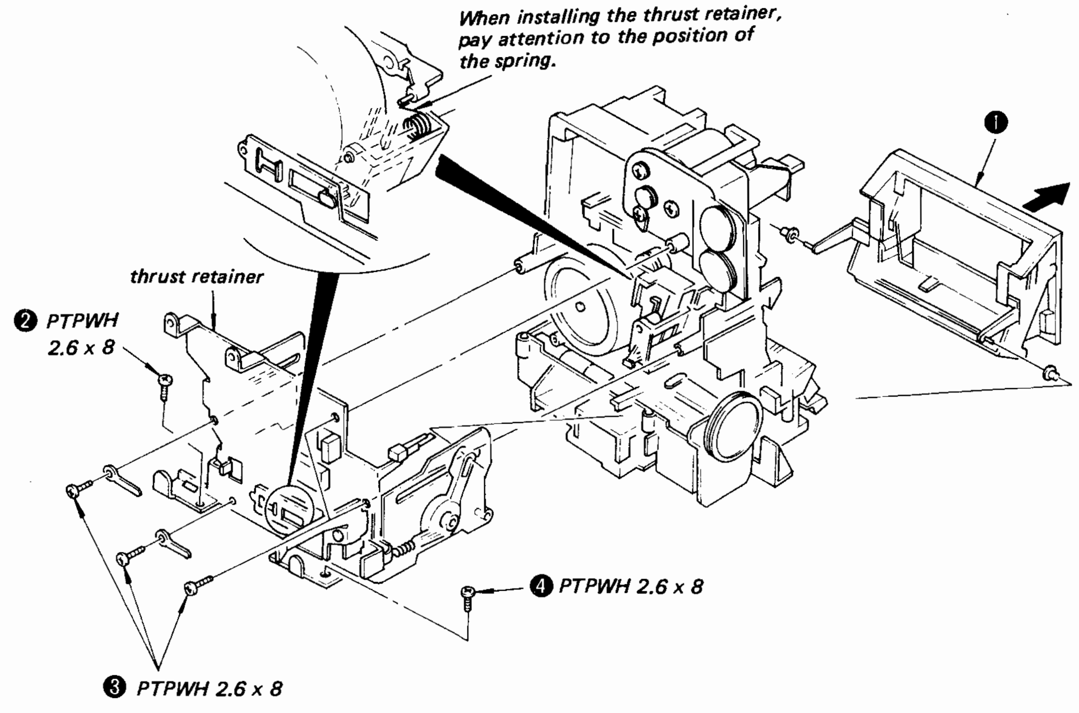

❶ BTP2.6x6
❷ BVTT 3x6
❸ BVTT3x6
AMS board



PC BOARDS ON CHASSIS


BVTP3 x 12
BVTP 3 x 12
BVTP3 x 12

THRUST RETAINER

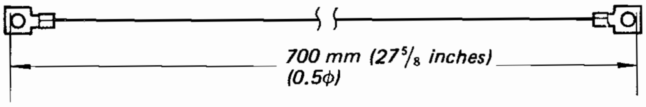


When installing the thrust retainer, pay attention to the position of the spring.

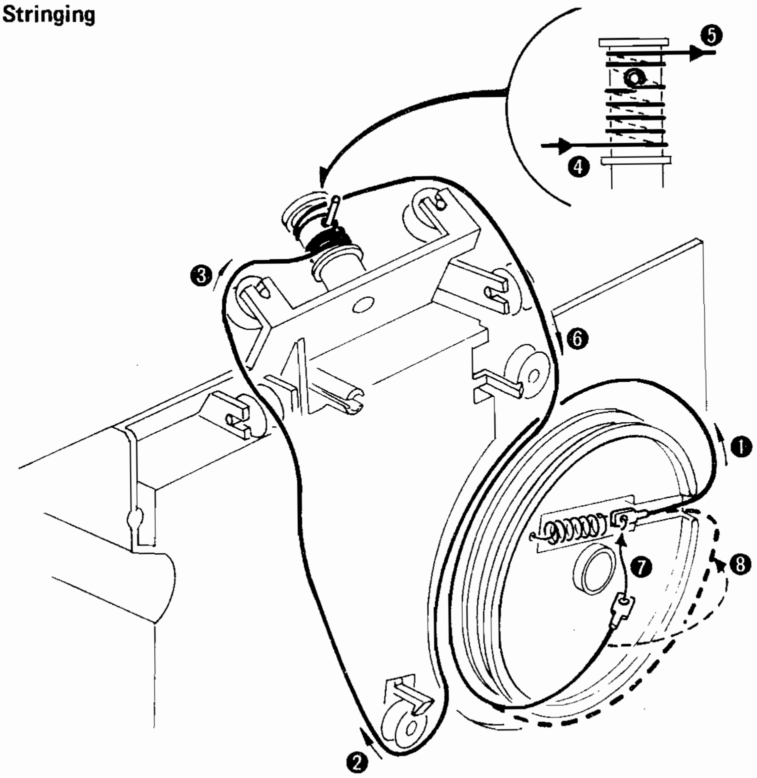
❶
thrust retainer
❷ PTPWH 2.6 x 8
❸ PTPWH 2.6 x 8
❹ PTPWH 2.6 x 8

2-2. DIAL CORD STRINGING

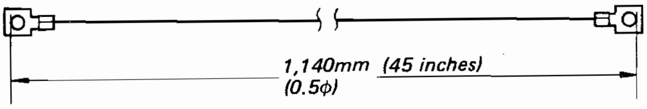
(1) Drum Cord Preparation


700 mm (27⁵/₈ inches)
(0.5ϕ)

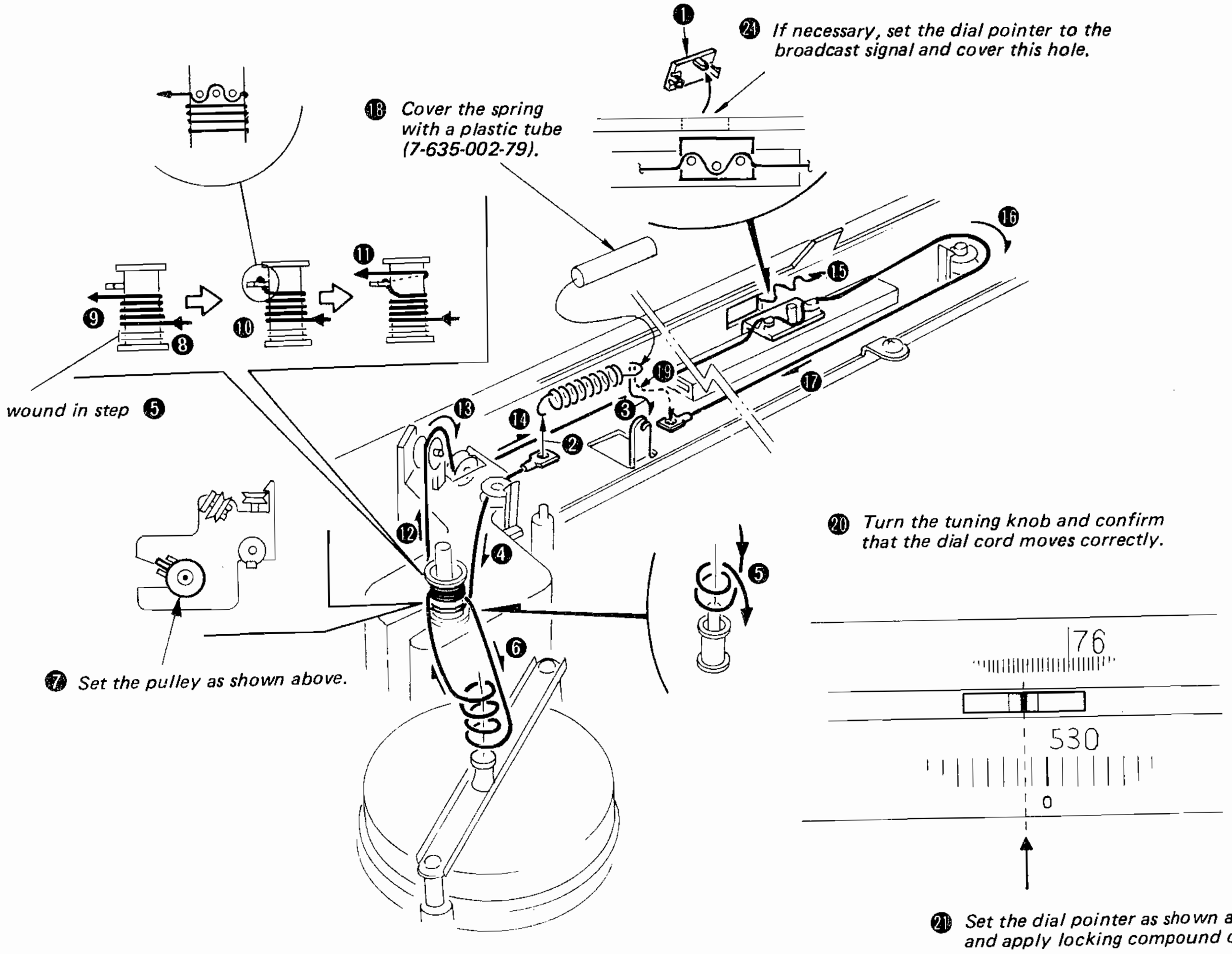
(2) Drum Cord Stringing



(3) Dial Cord Preparation


1,140mm (45 inches)
(0.5ϕ)

(4) Dial Cord Stringing



㉔ *If necessary, set the dial pointer to the broadcast signal and cover this hole.*

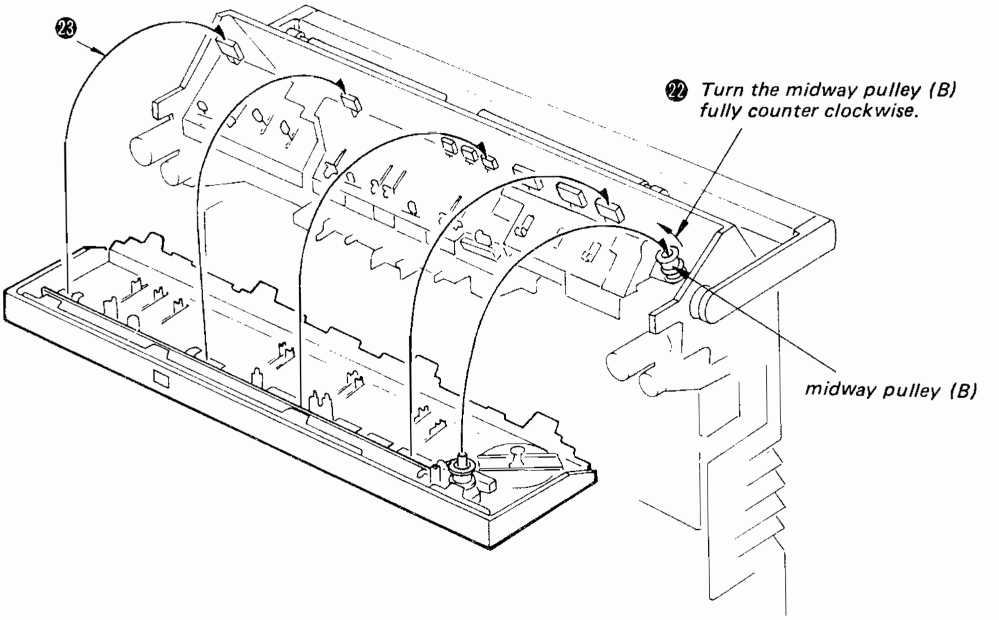
⑱ *Cover the spring with a plastic tube (7-635-002-79).*

wound in step ❺

❼ *Set the pulley as shown above.*

⑳ *Turn the tuning knob and confirm that the dial cord moves correctly.*

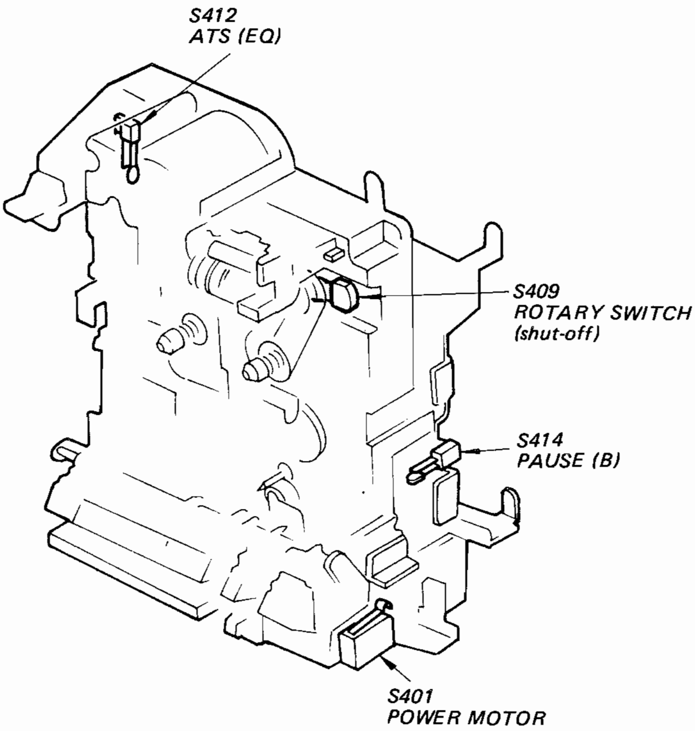
㉑ *Set the dial pointer as shown above and apply locking compound on it.*

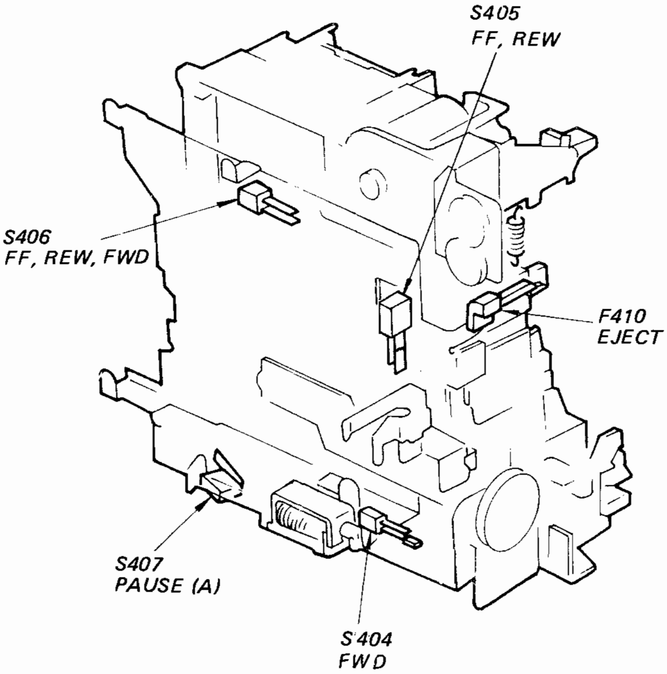


㉒ *Turn the midway pulley (B) fully counter clockwise.*

midway pulley (B)

2-3. SWITCH LOCATION FOR MECHANISM


S412
ATS (EQ)
S409
ROTARY SWITCH
(shut-off)
S414
PAUSE (B)
S401
POWER MOTOR


S405
FF, REW
S406
FF, REW, FWD
F410
EJECT
S407
PAUSE (A)
S404
FWD

SECTION 3
ADJUSTMENTS

3-1. MECHANICAL ADJUSTMENT

PRECAUTION

1. Clean the following parts with a denatured-alcohol-moistened swab:

record/playback head	pinch roller
erase head	rubber belts
capstan	idlers

2. Demagnetize the record/playback head with a head demagnetizer.
3. Do not use a magnetized screwdriver for the adjustments.
4. After the adjustments, apply suitable locking compound to the parts adjusted.
5. The adjustments should be performed with the rated power supply voltage unless otherwise noted.

Torque Measurement

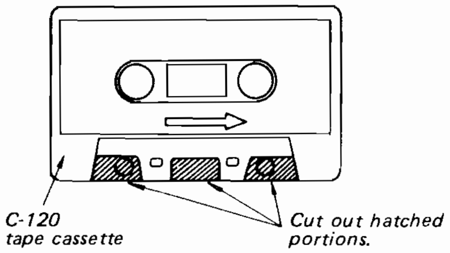
Torque	Torque meter	Meter reading
Forward	CQ-102C	22 ~ 55 g•cm (0.30 ~ 0.76 oz•inch)
Fast Forward and Rewind	CQ-201B	Less than 130 g•cm (1.79 oz•inch)
Back Tension	CQ-102C	2 ~ 5 g•cm (0.03 ~ 0.07 oz•inch)

Tape Pulling Strength Measurement

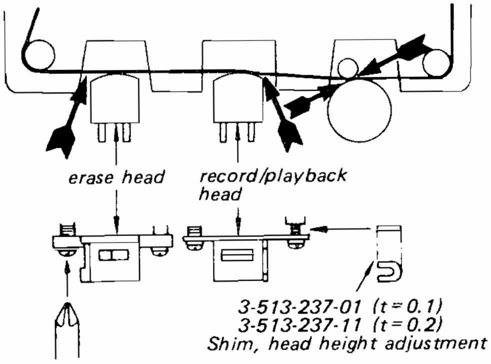
Meter	Meter reading
CQ-403	More than 160 g (5.65 oz)

Head Height Adjustment

1. Prepare an adjustment cassette as shown below.


C-120
tape cassette
Cut out hatched portions.

2. In record mode and viewing from the front, adjust the head heights to eliminate tape curl and tape twist at arrowed portions.


erase head
record/playback head
3-513-237-01 (t=0.1)
3-513-237-11 (t=0.2)
Shim, head height adjustment

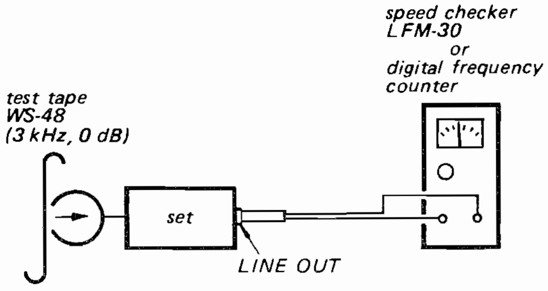
Tape Speed Adjustment

Setting:

VOLUME control: mechanical mid

Procedure:

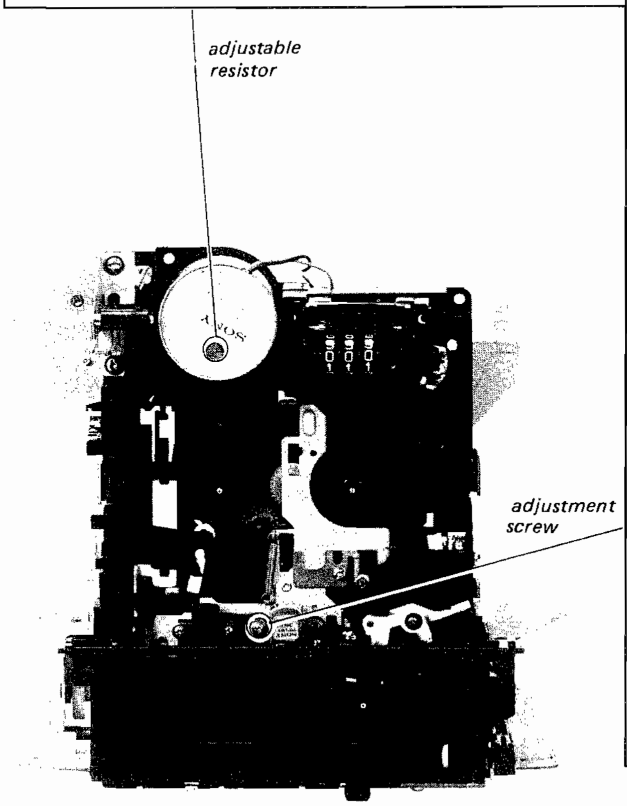
Mode: playback


speed checker
LFM-30
or
digital frequency counter
test tape
WS-48
(3 kHz, 0 dB)
set
LINE OUT

Specification:

Speed checker	Digited frequency counter
±1%	2.970 ~ 3.030 Hz

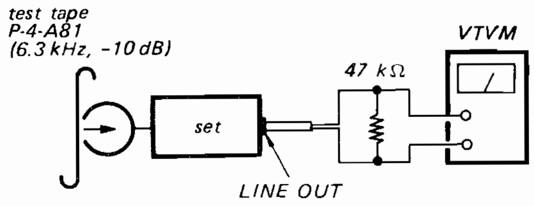
Frequency difference between the beginning and the end of the tape should be within 1% (30 Hz)


adjustable
resistor
adjustment
screw

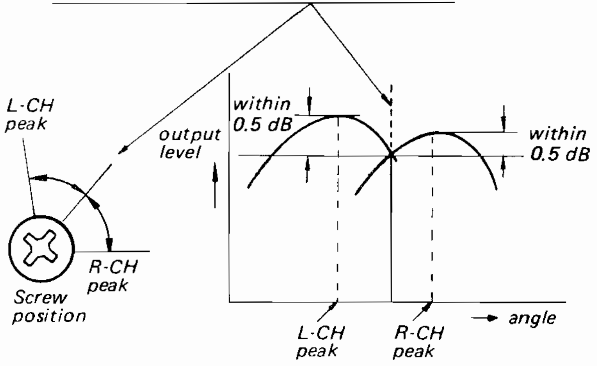
Record/playback Head Azimuth Adjustment

Procedure:

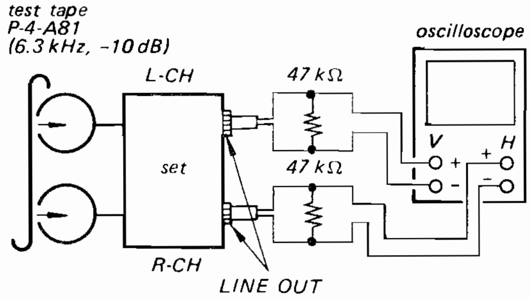
1. Mode: playback

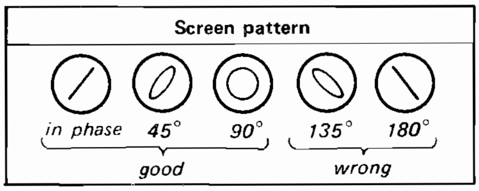

test tape
P-4-A81
(6.3 kHz, -10 dB)
VTVM
47 kΩ
set
LINE OUT

2. Turn the adjustment screw for the maximum output levels. If these levels do not match, turn the adjustment screw where both of output levels match together within 0.5 dB.



3. Phase Check
   Mode: playback

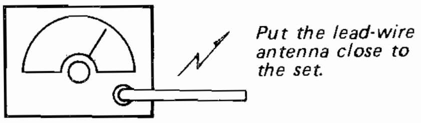

test tape
P-4-A81
(6.3 kHz, -10 dB)
L-CH
47 kΩ
oscilloscope
set
47 kΩ
V
H
R-CH
LINE OUT


Screen pattern
in phase
45°
90°
135°
180°
good
wrong

3-2. ELECTRICAL ADJUSTMENTS

MW SECTION

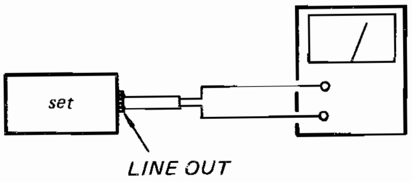
AM rf signal generator



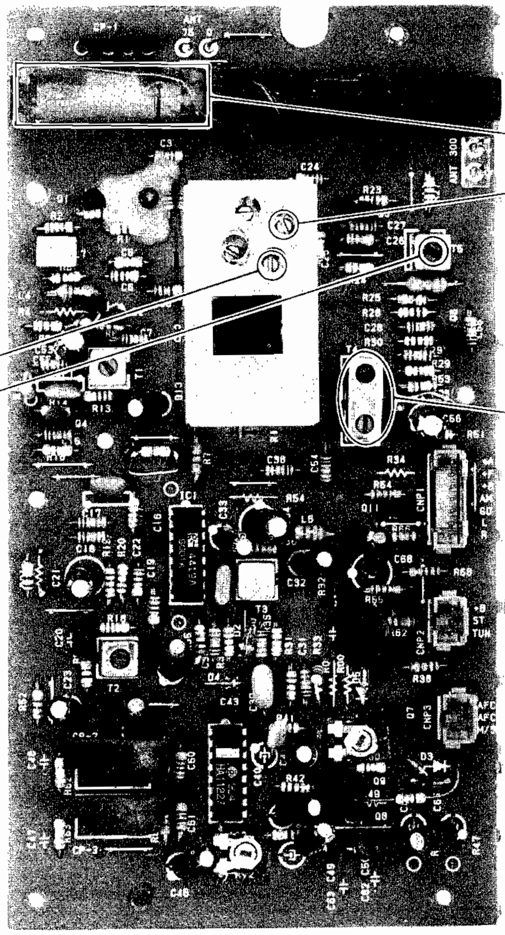
Put the lead-wire antenna close to the set.

30% amplitude modulation by 400 Hz signal

VOM (range: 0.5–5 V ac)



- Repeat the procedures in each adjustment several times, and the frequency coverage and tracking adjustments should be finally done by the trimmer capacitors.

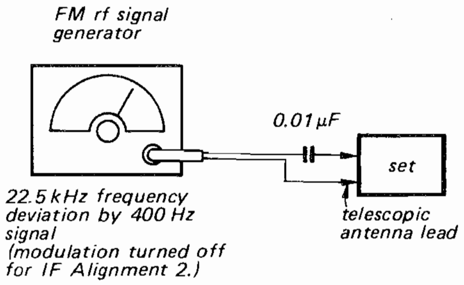


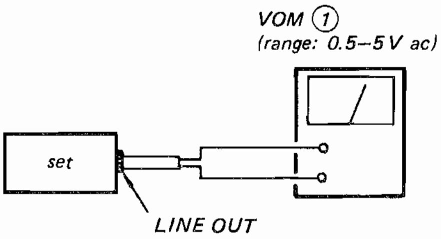
MW TRACKING ADJUSTMENT	
Adjust for a maximum reading on VOM.	
L6	520 kHz
CT4	1,680 kHz

MW FREQUENCY COVERAGE ADJUSTMENT	
Adjust for a maximum reading on VOM.	
1,680 kHz	CT3
520 kHz	T5

MW IF ALIGNMENT	
Adjust for a maximum reading on VOM.	
T4	455 kHz

FM SECTION


FM rf signal generator
0.01 µF
set
22.5 kHz frequency deviation by 400 Hz signal (modulation turned off for IF Alignment 2.)
telescopic antenna lead


VOM ①
(range: 0.5–5 V ac)
set
LINE OUT

- Repeat the procedures in each adjustment several times, and the frequency coverage and tracking adjustments should be finally done by the trimmer capacitors.

FM TRACKING ADJUSTMENT

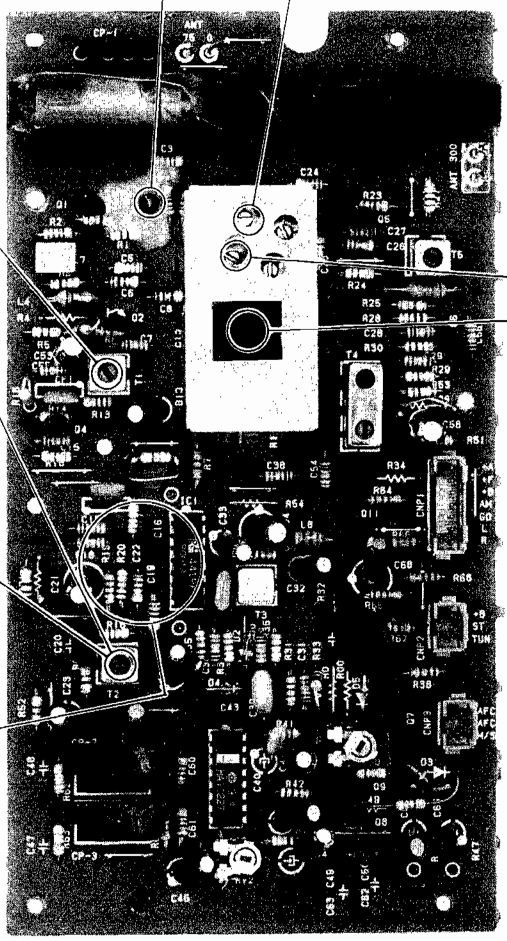
Adjust for a maximum reading on VOM ①.

87.1 MHz	108.5 MHz
L3	CT1

FM IF ALIGNMENT 1
(10.7 MHz with modulation)

Adjust for a maximum reading on VOM ①.

T1
T2


CP-1
ANT
C3
Q1
R2
C24
R23
C27
C26
T6
R24
R25
R28
C28
R30
T4
R29
C53
C58
R51
L4
C5
C6
C8
Q2
C7
R5
C55
T1
R19
R13
Q4
C38
C54
R34
R84
Q11
CNP1
IC1
R64
L8
C16
C19
R11
R20
C22
C21
C35
C32
R32
C68
R68
C20
T2
T3
R33
R00
R38
CNP2
C73
C43
Q4
R52
C48
R42
Q9
Q8
Q7
CNP3
C47
CP-3
C61
C60
C46
C49
C63
C62
R47

FM FREQUENCY COVERAG
ADJUSTMENT

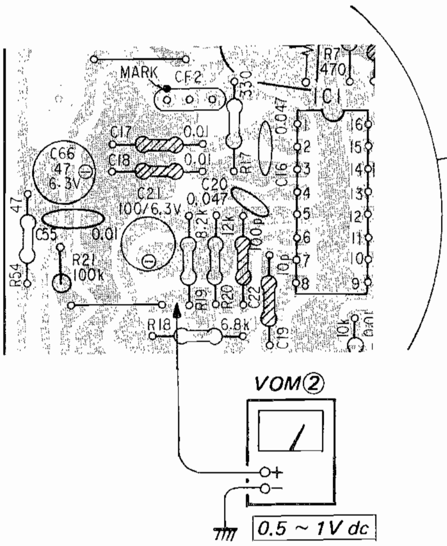
Adjust for a maximum readin on VOM ①.

CT2	108.5 MH
L5	87.1 MH

FM IF ALIGNMENT 2
(10.7 MHz with no modulation)

Adjust for 0V reading on VOM ②.

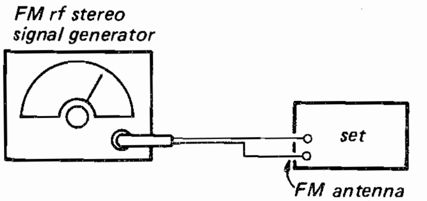
T2


MARK
CF2
R7
470
C1
330
C17
0.01
C18
0.01
C66
47
6.3V
C21
100/6.3V
C20
0.047
C16
0.047
R17
47
C55
0.01
R21
100k
R54
8.2k
12k
100p
10p
R19
R20
C22
C19
R18
6.8k
10k
VOM②
+
–
0.5 ~ 1V dc

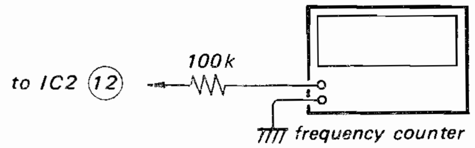
19 kHz Adjustment

A) Regular Method

Procedure:


FM rf stereo signal generator
set
FM antenna terminal

Carrier frequency: *98 MHz*
Modulation: *400 Hz, 75 kHz deviation (100%)*
Output level: *1 mV (60dB)*

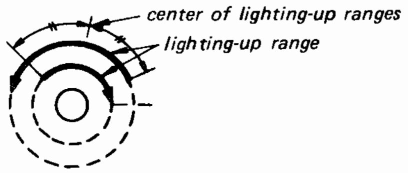

to IC2 ⑫
100k
frequency counter

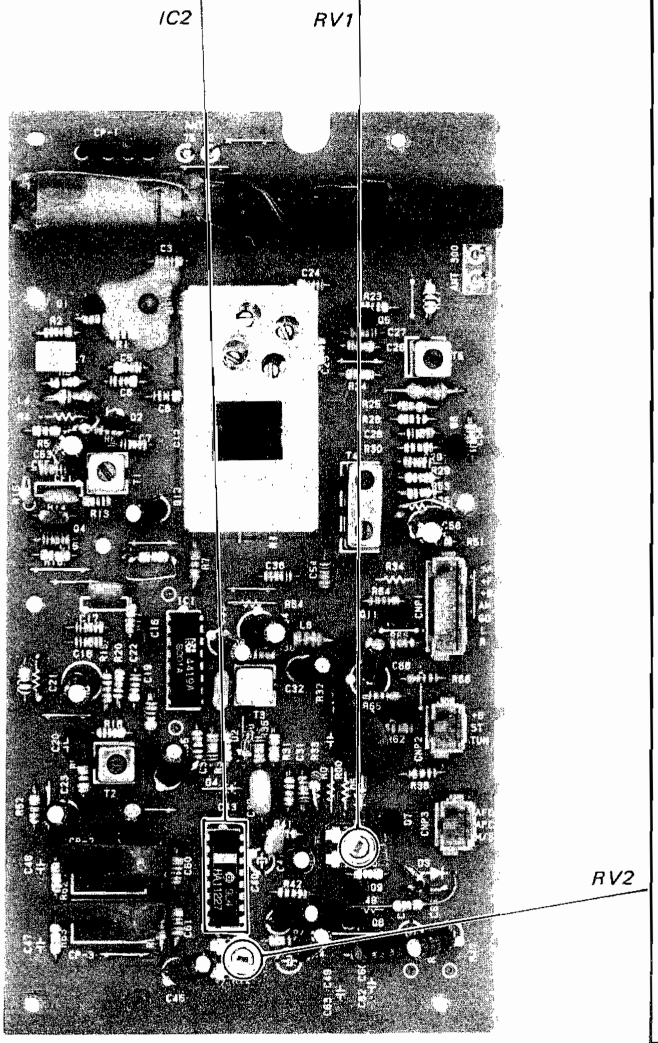
1. Tune the set to 98 MHz.
2. Adjust RV1 for 19 kHz ±30 Hz on the counter.

B) Simple Method

Procedure:

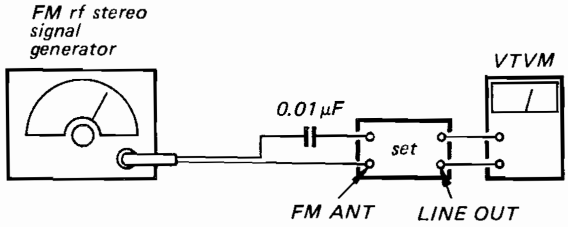
1. Tune the set to the FM stereo broadcasting signal.
2. Turn RV1 clockwise or counterclockwise and memorize the lighting-up range of the stereo lamp.
3. Secure RV1 at the center of the lighting-up range of both turns as shown below.


center of lighting-up ranges
lighting-up range



FM Stereo Separation Adjustment

Procedure:


FM rf stereo signal generator
VTVM
0.01 μF
set
FM ANT
LINE OUT

Carrier frequency: *98 MHz*
Output level: *1 mV (60 dB)*
Mode: *Stereo*
Modulation:
Audio (400 Hz): *67.5 kHz deviation (90%)*
Pilot (19 kHz): *7.5 kHz deviation (10%)*

FM stereo signal generator output channel	VTVM connection	VTVM reading (dB)
L-CH	L-CH	Ⓐ
R-CH	L-CH	Ⓑ Adjust RV2 for minimum reading.
R-CH	R-CH	Ⓒ
L-CH	R-CH	Ⓓ Adjust RV2 for minimum reading.

L-CH Stereo separation: Ⓐ – Ⓑ
R-CH Stereo separation: Ⓒ – Ⓓ

The separations of both channels should be equal.

TAPE RECORDER SECTION

Note: The adjustment should be performed in the order given in this service manual. The adjustments should be performed for both L-CH and R-CH.

- Set the TAPE SELECT switch according to the tape as follows.

TAPE	TAPE SELECT switch
CS-15	TYPE I (NORM)
CS-25	TYPE II (CrO_2)
CS-40	TYPE IV (METAL)

Standard Record:

Deliver the standard input signal level to the input jack and set the REC LEVEL control to obtain the standard output signal level.

Standard Input Level

	source imp.	input level
MIC	300 Ω	0.77mV (−60dB)
LINE IN	10 kΩ	0.44V (−5dB)
MIX MIC	300 Ω	2.5mV (−50dB)
PHONO	2.2 kΩ	7.7mV (−40dB)

Standard Output Level

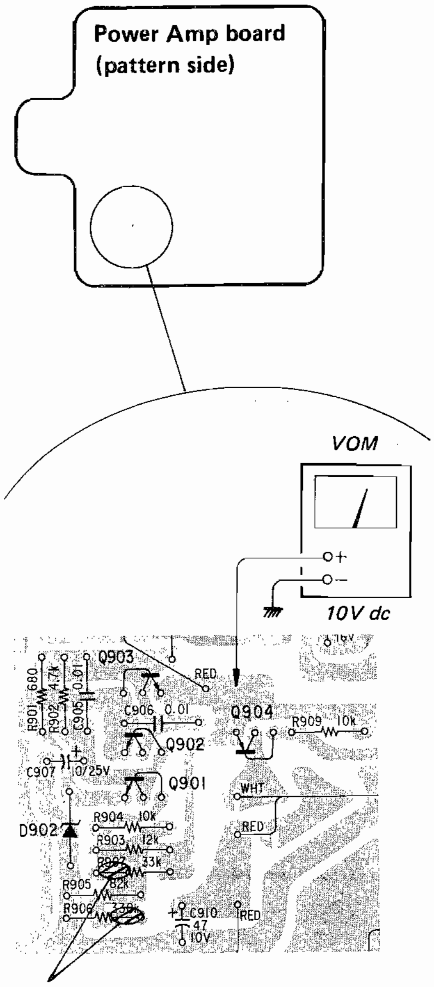
	load imp.	input level
EXT SP	4 Ω	0.775V (0dB)
LINE OUT	47 kΩ	0.44V (−5dB)
HEADPHONES	8 Ω	39mV (−26dB)

B+ Voltage Adjustment

Setting:

Power supply voltage: 15V dc
Power switch: ON

Adjustment Location and Specification:


Power Amp board
(pattern side)
VOM
+
−
10V dc
Q903
RED
R901 680
R902 4.7k
C905 0.01
C906 0.01
Q904
R909 10k
Q902
C907 10/25V
Q901
WHT
D902
R904 10k
R903 12k
R907 33k
R905 82k
R906 330k
C910 47 10V
RED

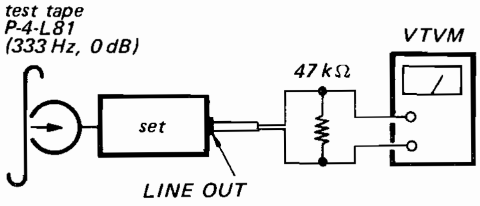
Change the pattern connection for 10V dc VOM reading.

Playback Level Adjustment

Setting:

TAPE SELECT switch: TYPE I

Procedure:


test tape
P-4-L81
(333 Hz, 0 dB)
VTVM
47 kΩ
set
LINE OUT

Specification:

LINE OUT level: 0.55±0.1V
(−3±1.5 dB)

Level difference between channels:
less than 0.5 dB

Check that the LINE OUT level does not change in playback mode while changing the mode from playback to stop several times.

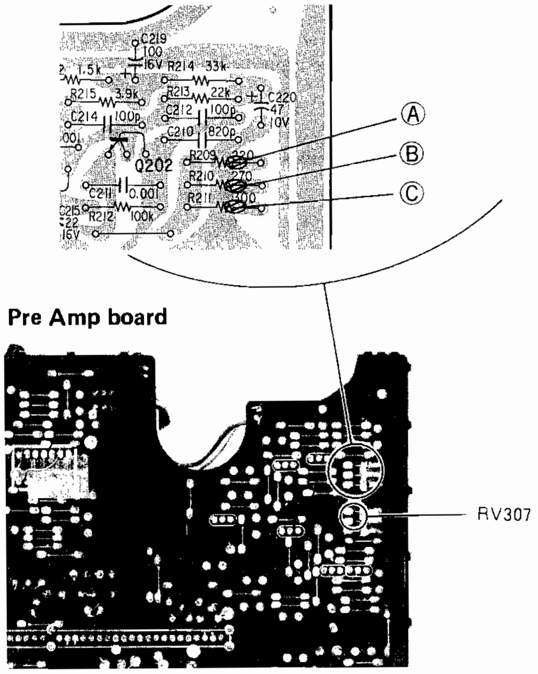
Adjustment Location:

(R-CH)

Pattern connection	LINE OUT level
Ⓐ	Low
Ⓑ	↕
Ⓒ	High

(L-CH)

Adjust RV307 so that the separations of both channels are equal.


C219
100
16V
1.5k
R214 33k
R215 3.9k
R213 22k
C220
47
10V
C214 100p
C212 100p
C210 820p
Q202
R209 220
R210 270
R211 300
C211 0.001
R212 100k
C215
22
16V
Ⓐ
Ⓑ
Ⓒ
Pre Amp board
RV307

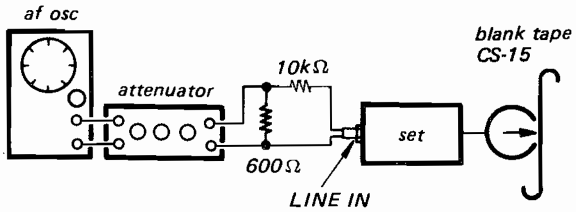
Record Bias Adjustment

Setting:

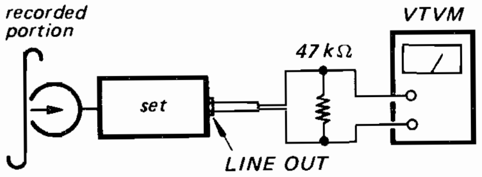
REC LEVEL control: MID
LINE IN switch: ON

Procedure:

1. Mode: record


af osc
attenuator
10kΩ
600Ω
set
blank tape
CS-15
LINE IN
1) 333 Hz
2) 6.3k Hz
16mV (−34dB)

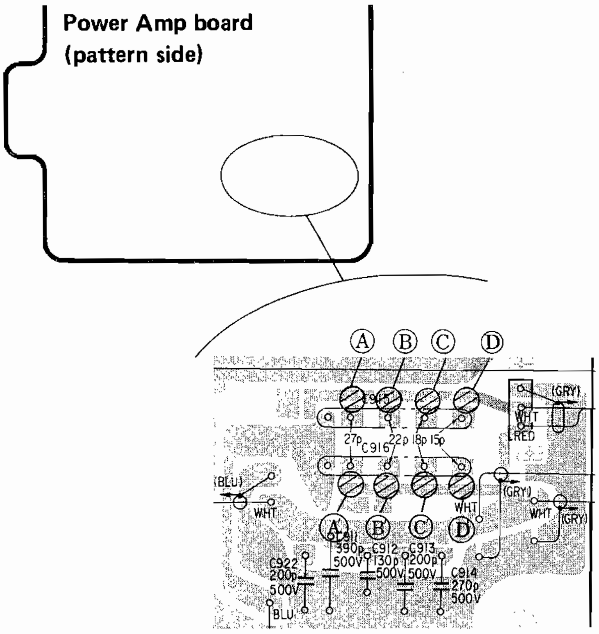
2. Mode: playback


recorded
portion
VTVM
47 kΩ
set
LINE OUT

Change the pattern connection so that 6.3 kHz signal level is 0^{+2}_{-1} dB relative to 333 Hz signal level.

Adjustment Location:

Pattern connection		6.3 kHz VTVM reading
L-CH	R-CH	
Ⓐ	Ⓐ'	down
Ⓑ	Ⓑ'	↕
Ⓒ	Ⓒ'	
Ⓓ	Ⓓ'	up


Power Amp board
(pattern side)
Ⓐ Ⓑ Ⓒ Ⓓ
C915
27p
C916
22p
18p
15p
(GRY)
WHT
RED
(BLU)
WHT
(GRY)
WHT
(GRY)
Ⓐ' Ⓑ' Ⓒ' Ⓓ'
C911
390p
500V
C912
130p
500V
C913
200p
500V
C922
200p
500V
C914
270p
500V
BLU

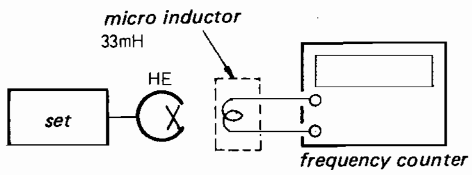
Bias OSC Frequency Adjustment

Setting:

TAPE SELECT switch: TYPE IV (METAL)

Procedure:

Mode: record (without signal)

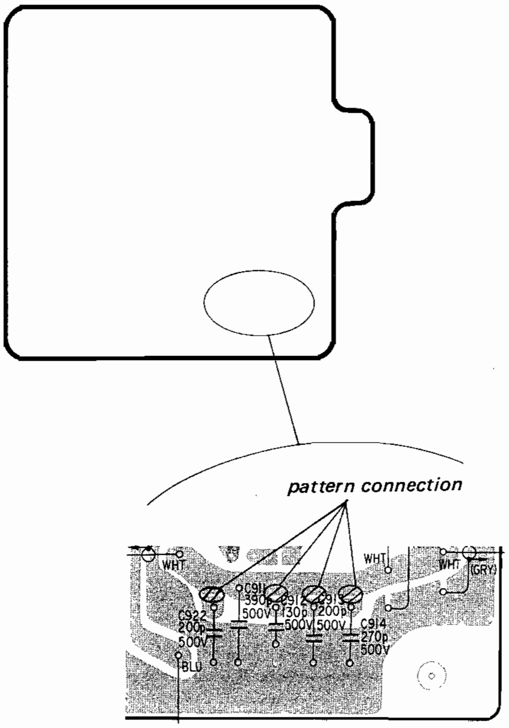

micro inductor
33mH
HE
set
frequency counter

Put the micro inductor close to the erase head core. Change the pattern connection for specified frequency.

Specification:

AFC/ISS switch	counter reading
1	86±1.5 kHz
2	83±2.5 kHz
3	80±2.5 kHz

Adjustment Location:


pattern connection
WHT
WHT
(GRY)
C922
200p
500V
C911
390p
500V
C912
130p
500V
C913
200p
500V
C914
270p
500V
BLU

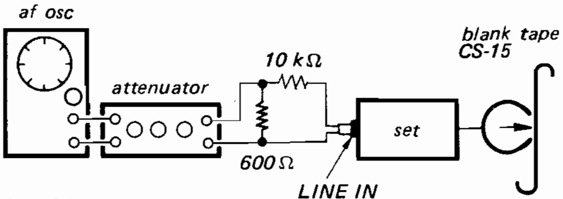
Record Level Adjustment

Setting:

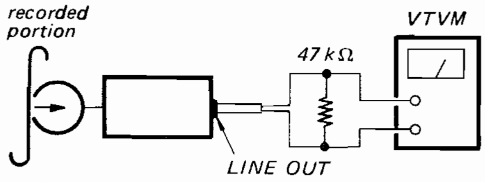
TAPE SELECT switch: TYPE I (NORM)
REC LEVEL control: standard record

Procedure: (See page 31.)

1. Mode: record


af osc
attenuator
10 kΩ
600 Ω
set
blank tape
CS-15
LINE IN
333 Hz, 0.44V (−5 dB)

2. Mode: playback

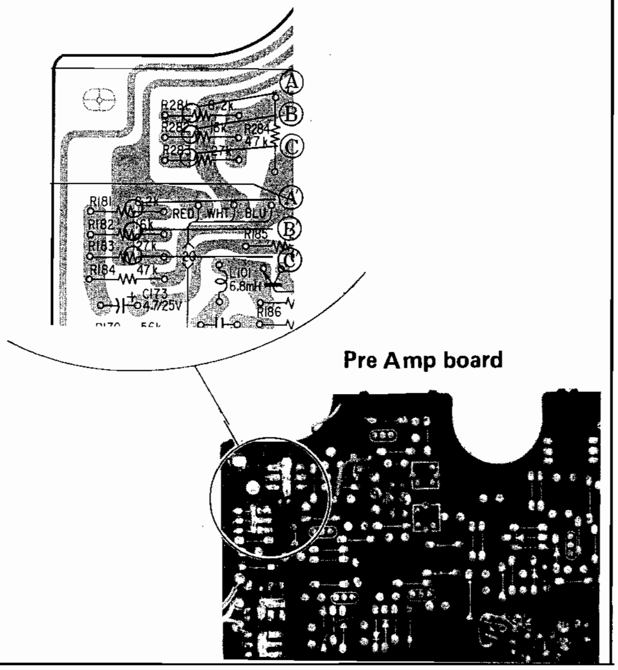

recorded portion
47 kΩ
VTVM
LINE OUT

Specification:

LINE OUT level: 0.44±0.08V (−5±1.5 dB)

Adjustment Location:

Pattern connection		LINE OUT level
R-CH	L-CH	
Ⓐ	Ⓐ'	High
Ⓑ	Ⓑ'	↕
Ⓒ	Ⓒ'	Low


A
B
C
A
B
C
R281
R282
R283
R284
R181
R182
R183
R184
R185
R186
RED
WHT
BLU
L101
6.8mH
C173
4.7/25V
Pre Amp board

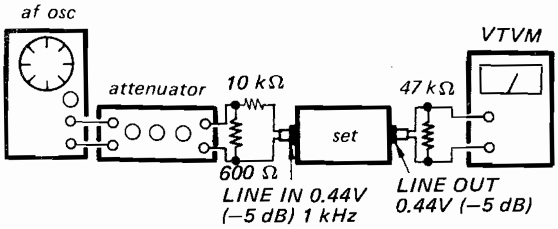
Meter Calibration

Setting:

Power Supply Voltage: 15V dc
LINE IN switch : ON
MIC MIX switch : ON

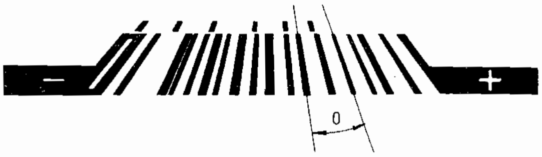
Procedure:

1. Mode: playback


af osc
VTVM
attenuator
10 kΩ
47 kΩ
set
600 Ω
LINE IN 0.44V
(−5 dB) 1 kHz
LINE OUT
0.44V (−5 dB)

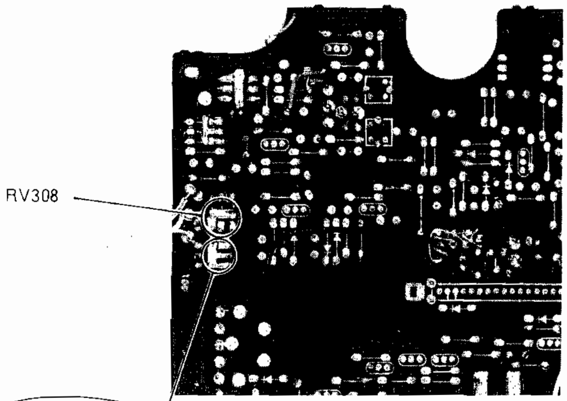
Slide the REC LEVEL control for 0.44V (−5 dB) LINE OUT level.

2. Change the pattern connection for the R-CH meter indication as shown below.

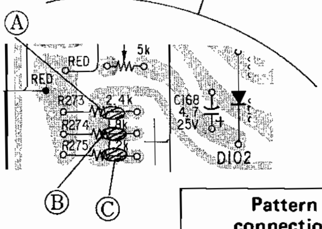


Specification : 0±1

3. Adjust RV308 so that the L-CH meter indicates the same level as R-CH.



Pre Amp board

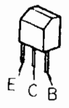

Ⓐ
RED
5k
RED
R273
2.4k
R274
1.8k
R275
1.2k
C168
4.7
25V
D102
Ⓑ
Ⓒ

Pattern connection	Level meter indication
Ⓐ	⊖
Ⓑ	↕
Ⓒ	⊕

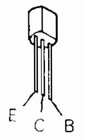
SECTION 4
DIAGRAMS

- **Semiconductor Lead Layouts**

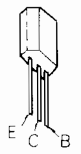
2SD773



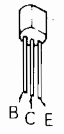
2SA733
2SA772
2SA772-23
2SC945
2SC1345
2SC1361
2SC1362
2SC1363
2SC1364
2SC1474
2SC1674



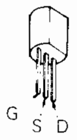
2SA1027R



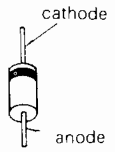
2SC710
2SC710-13
2SC710-14



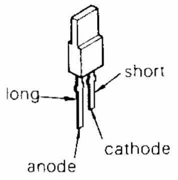
2SK120



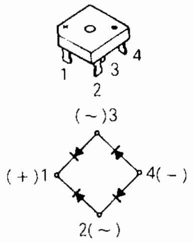
10E-1
10E-2
RD6.2E
RD8.2E
RD13E
1S1555
1S2076
1S2687S-1
1T22
1T22AM
1T23
1T40
EQB01-12Z
SD113


cathode
anode

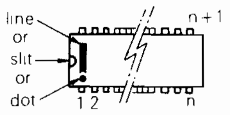
SLP141B
SLP241B


short
long
cathode
anode

S4VB10

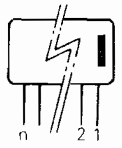


KB4419A
HA11227
HA12024
CX766


line
or
slit
or
dot
n+1
1 2
n

(Top view)

BX372

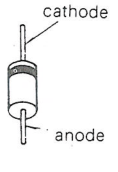


(Marking side view)

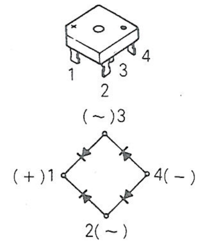
SECTION 4
DIAGRAMS

0
0-13
0-14

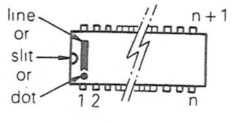
10E-1
10E-2
RD6.2E
RD8.2E
RD13E
1S1555
1S2076
1S2687S-1
1T22
1T22AM
1T23
1T40
EQB01-12Z
SD113


cathode
anode

S4VB10

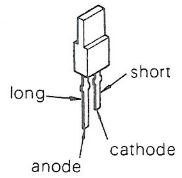


KB4419A
HA11227
HA12024
CX766

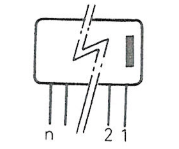

line
or
slit
or
dot
n+1
1 2
n

(Top view)

SLP141B
SLP241B


short
long
cathode
anode

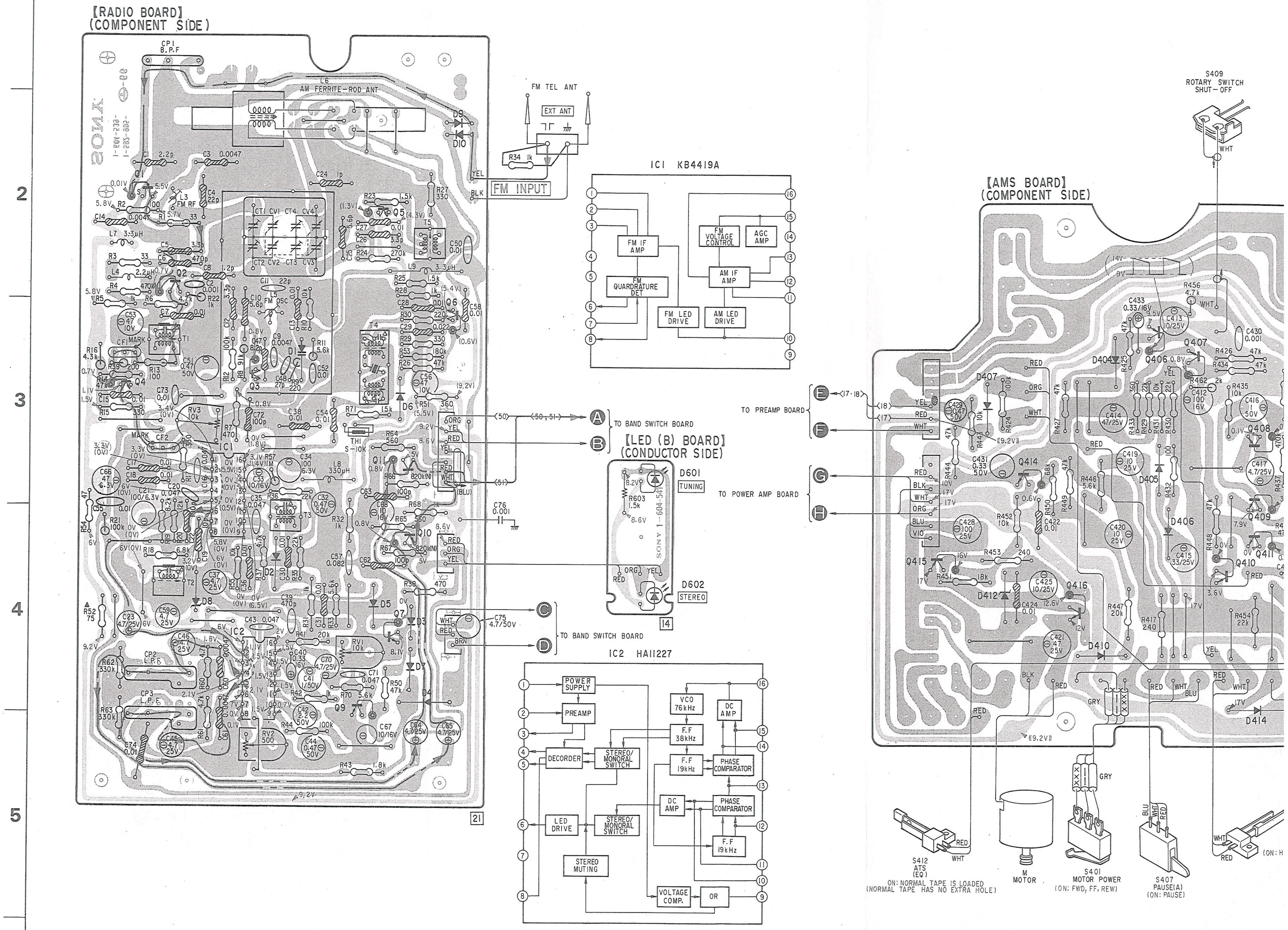
BX372



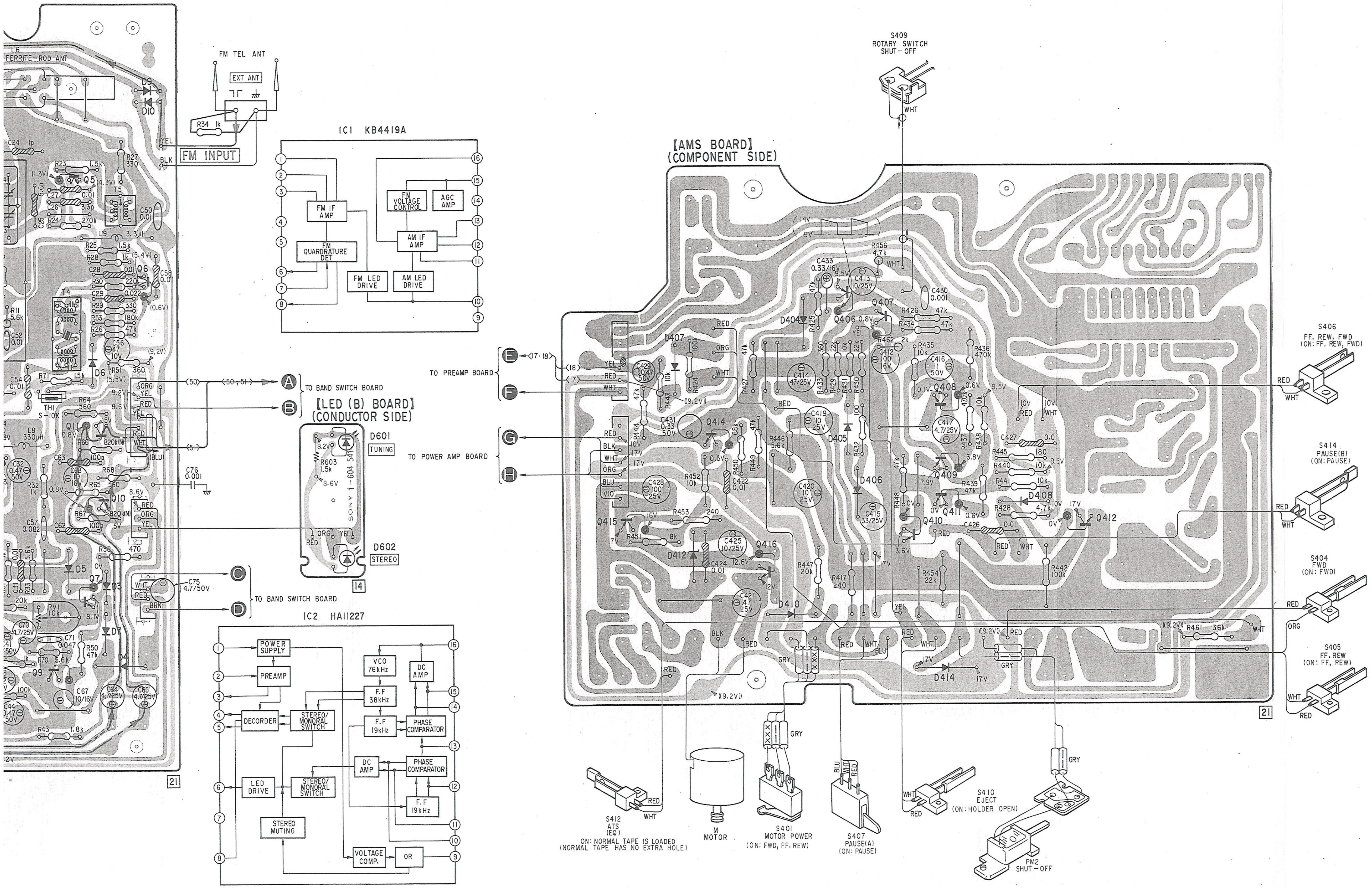
(Marking side view)

4-1. MOUNTING DIAGRAM

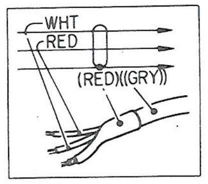
	A	B	C	D	E	F
Q · IC	1 2 IC1 4	3 IC2 5 9 7 11 10	6		415 414	416 406 407 408 409 410 411
D	8	2 1 5 6 3 7 4	9 10	601 602	407 412	404 410 405 406 414


1
2
3
4
5
[RADIO BOARD]
(COMPONENT SIDE)
CP1 B.P.F
L6 AM FERRITE-ROD ANT
SONY
D9
D10
FM TEL ANT
EXT ANT
R34 1k
YEL
BLK
FM INPUT
L3 FM RF
FM OSC
T1
T2
T3
T4
T5
IC1
IC2
CP2 L.P.F
CP3 L.P.F
RV1 10k
RV2 500
RV3 10k
TH1 S-10K
21
IC1 KB4419A
FM IF AMP
FM QUADRATURE DET
FM VOLTAGE CONTROL
AGC AMP
AM IF AMP
FM LED DRIVE
AM LED DRIVE
TO BAND SWITCH BOARD
[LED (B) BOARD]
(CONDUCTOR SIDE)
D601
TUNING
R603 1.5k
SONY 1-604-54
D602
STEREO
14
TO BAND SWITCH BOARD
IC2 HA11227
POWER SUPPLY
PREAMP
DECORDER
STEREO/MONORAL SWITCH
VCO 76kHz
F.F 38kHz
F.F 19kHz
DC AMP
PHASE COMPARATOR
LED DRIVE
STEREO MUTING
VOLTAGE COMP.
OR
TO PREAMP BOARD
TO POWER AMP BOARD
S409
ROTARY SWITCH
SHUT-OFF
[AMS BOARD]
(COMPONENT SIDE)
S412
ATS
(EQ)
ON: NORMAL TAPE IS LOADED
(NORMAL TAPE HAS NO EXTRA HOLE)
M
MOTOR
S401
MOTOR POWER
(ON: FWD, FF, REW)
S407
PAUSE(A)
(ON: PAUSE)

	B	C	D	E	F	G	H	I
Q · IC	5 11 10 9 7	6		415 414	416 406 407 410 408 409 411	412		
D	5 6 3 7 4	9 10	601 602	407 412	404 410 405 406 414	408		


L6
FERRITE-ROD ANT
FM TEL ANT
EXT ANT
R34 1k
FM INPUT
YEL
BLK
D9
D10
IC1 KB4419A
FM IF AMP
FM QUARDRATURE DET
FM VOLTAGE CONTROL
AGC AMP
AM IF AMP
FM LED DRIVE
AM LED DRIVE
TO BAND SWITCH BOARD
【LED (B) BOARD】
(CONDUCTOR SIDE)
D601
TUNING
D602
STEREO
R603 1.5k
SONY 1-604-541
TO BAND SWITCH BOARD
IC2 HA11227
POWER SUPPLY
PREAMP
DECORDER
STEREO/MONORAL SWITCH
VCO 76kHz
F.F 38kHz
F.F 19kHz
DC AMP
PHASE COMPARATOR
LED DRIVE
STEREO MUTING
VOLTAGE COMP.
OR
TO PREAMP BOARD
TO POWER AMP BOARD
【AMS BOARD】
(COMPONENT SIDE)
S409
ROTARY SWITCH
SHUT-OFF
S406
FF, REW, FWD
(ON: FF, REW, FWD)
S414
PAUSE(B)
(ON: PAUSE)
S404
FWD
(ON: FWD)
S405
FF, REW
(ON: FF, REW)
S412
ATS
(EQ)
ON: NORMAL TAPE IS LOADED
(NORMAL TAPE HAS NO EXTRA HOLE)
M
MOTOR
S401
MOTOR POWER
(ON: FWD, FF, REW)
S407
PAUSE(A)
(ON: PAUSE)
S410
EJECT
(ON: HOLDER OPEN)
PM2
SHUT-OFF
21
14

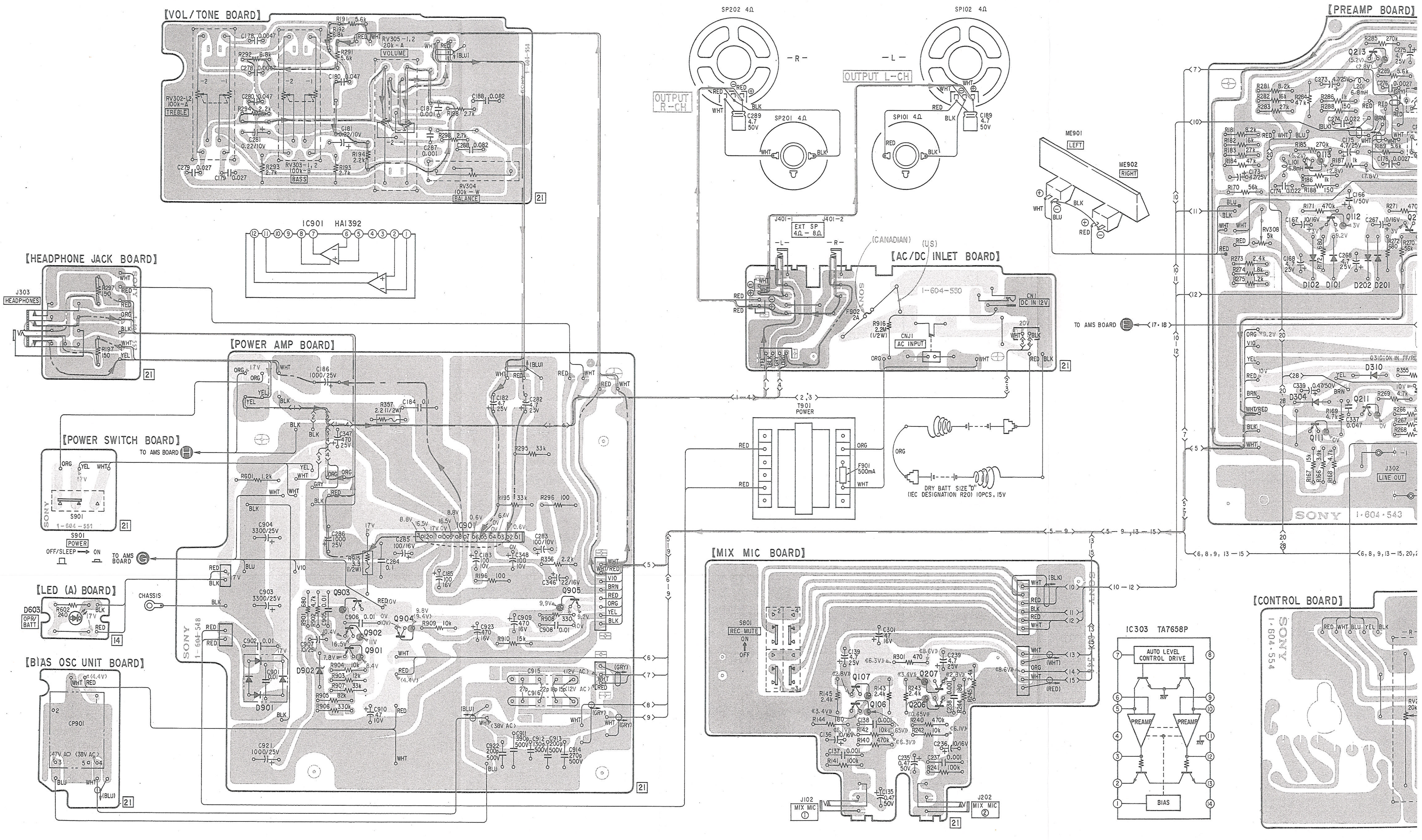
- [ ]← : indicates side identified with part number.
- Color code of sleeving over the end of the jacket.


WHT
RED
(RED)(GRY)

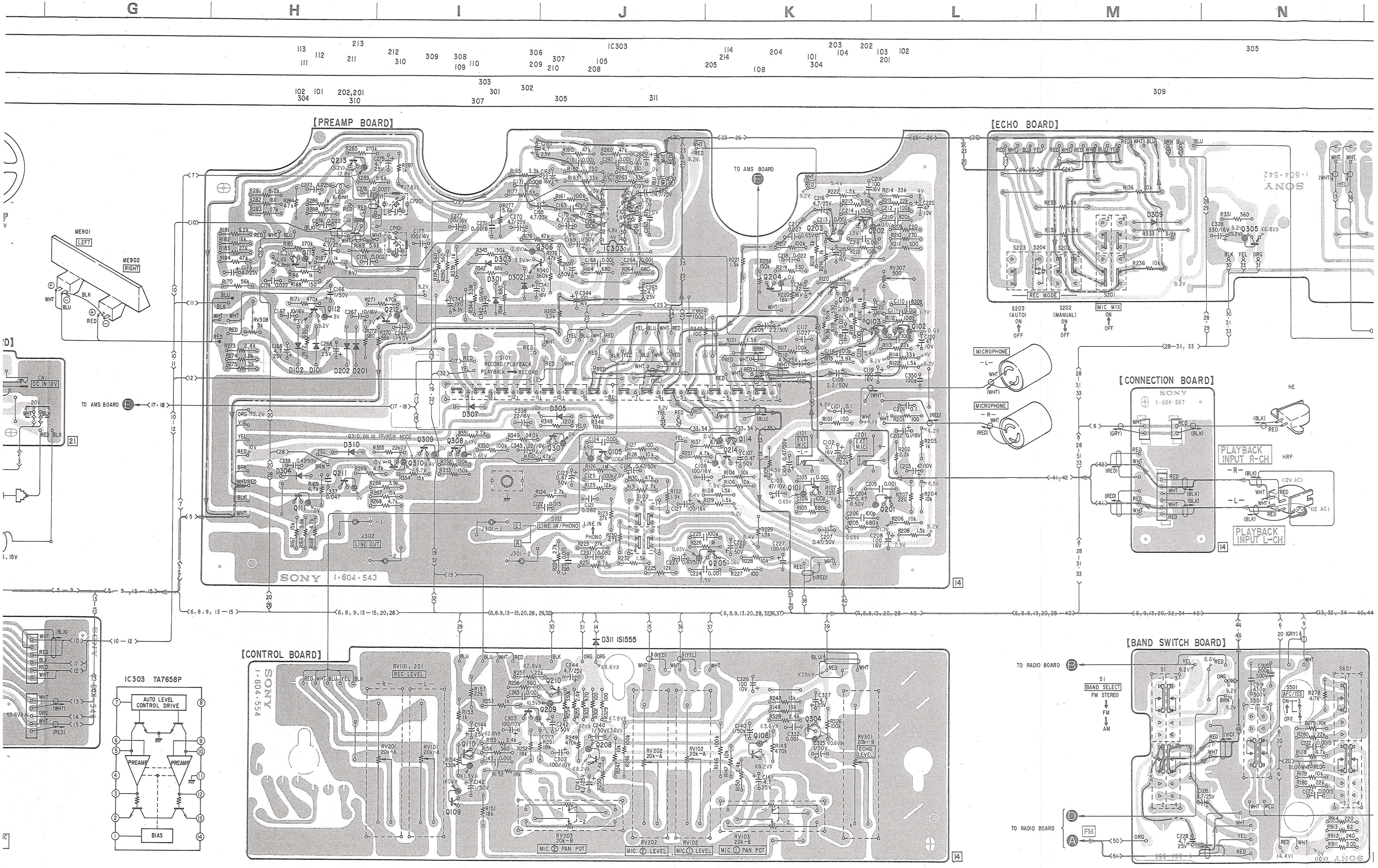
- ▨ : B+ pattern
- ➡ : signal path
- ➡ : L-CH signal path
- ➡ : R-CH signal path

4-2. MOUNTING DIAGRAM See page 36 for semiconductor lead layouts.

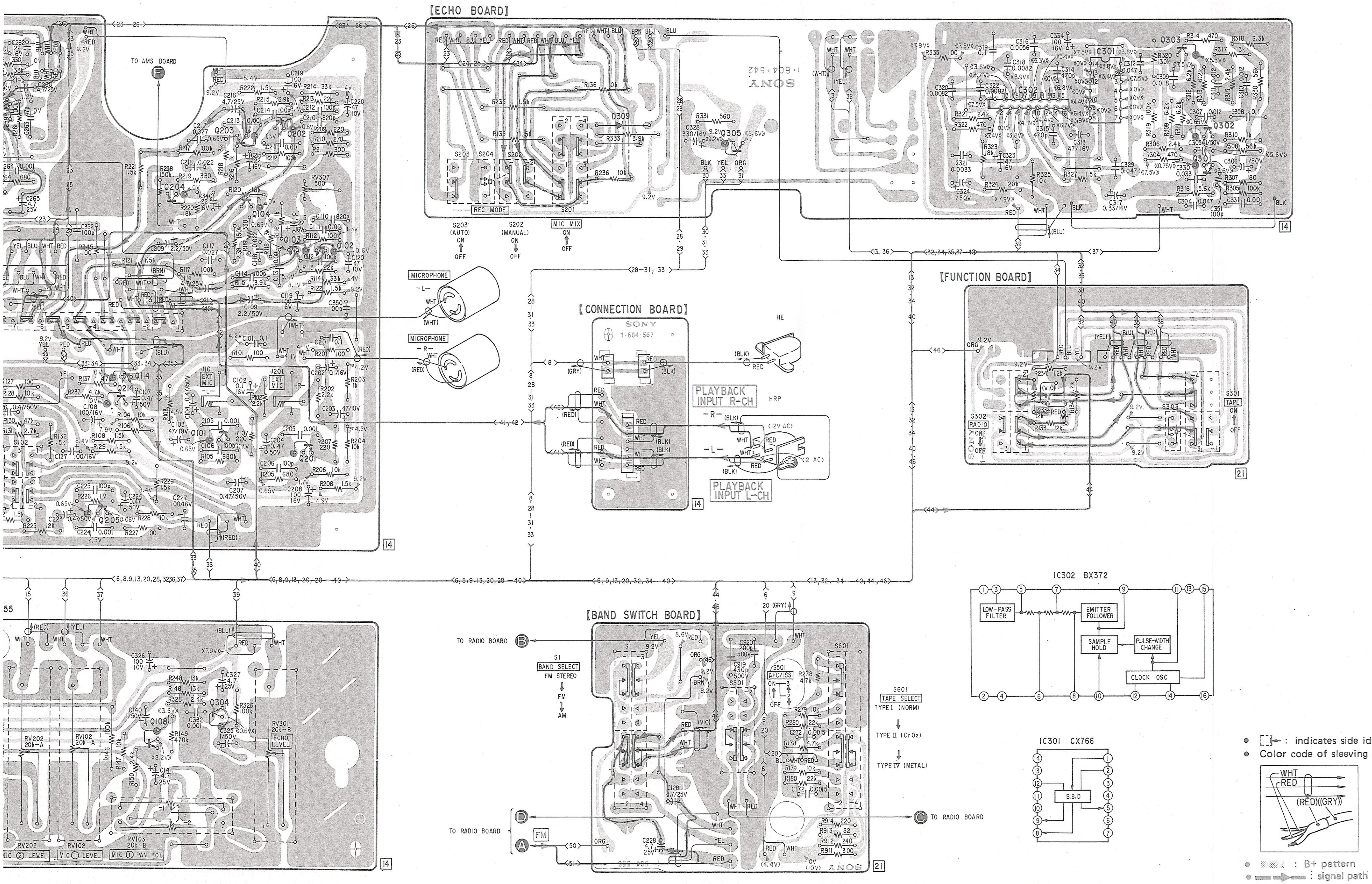
	A	B	C	D	E	F	G	H
Q·IC			903 902 901 904 IC901	905		107 106 207 206		113 111 112 211 213 21
D	603	901	902					102 304 101 202,201 310



A B C D E F G H
1 2 3 4 5
[VOL/TONE BOARD]
VOLUME
TREBLE
BASS
BALANCE
IC901 HA1392
[HEADPHONE JACK BOARD]
J303 HEADPHONES
[POWER AMP BOARD]
[POWER SWITCH BOARD]
TO AMS BOARD H
S901 POWER
OFF/SLEEP → ON
TO AMS BOARD G
[LED (A) BOARD]
D603 OPR/BATT
CHASSIS
[BIAS OSC UNIT BOARD]
CP901
SP202 4Ω
SP102 4Ω
SP201 4Ω
SP101 4Ω
OUTPUT R-CH
OUTPUT L-CH
- R -
- L -
J401-1 J401-2
EXT SP 4Ω - 8Ω
(CANADIAN) (US)
[AC/DC INLET BOARD]
1-604-550
CN1 DC IN 12V
CNJ1 AC INPUT
F902 2A
T901 POWER
F901 500mA
DRY BATT SIZE "D" (IEC DESIGNATION R20) 10PCS, 15V
ME901 LEFT
ME902 RIGHT
TO AMS BOARD E
[MIX MIC BOARD]
S801 REC MUTE ON OFF
J102 MIX MIC ①
J202 MIX MIC ②
IC303 TA7658P
AUTO LEVEL CONTROL DRIVE
PREAMP
PREAMP
BIAS
[PREAMP BOARD]
J302 LINE OUT
1-604-543
[CONTROL BOARD]
1-604-554
1-604-548
1-604-551


G
H
I
J
K
L
M
N
【PREAMP BOARD】
SONY 1-604-543
【ECHO BOARD】
SONY 1-604-542
【CONNECTION BOARD】
SONY 1-604-567
【CONTROL BOARD】
SONY 1-604-554
【BAND SWITCH BOARD】
IC303 TA7658P
AUTO LEVEL CONTROL DRIVE
PREAMP
PREAMP
BIAS
ME901 LEFT
ME902 RIGHT
TO AMS BOARD
TO RADIO BOARD
MICROPHONE -L-
MICROPHONE -R-
PLAYBACK INPUT R-CH
PLAYBACK INPUT L-CH
S101 RECORD/PLAYBACK
S102 LINE IN/PHONO
J302 LINE OUT
J101 EXT MIC
J201 EXT MIC
S203 (AUTO)
S202 (MANUAL)
S201 MIC MIX
REC MODE
S1 BAND SELECT FM STEREO FM AM
S501 AFC/ISS
S601
RV101, 201 REC LEVEL
RV203 MIC ② PAN POT
RV202 MIC ② LEVEL
RV102 MIC ① LEVEL
RV103 MIC ① PAN POT
RV301 ECHO LEVEL
RV307
D311 1S1555
Q310: ON IN FF/REW MODE
CN1 DC IN 12V
14

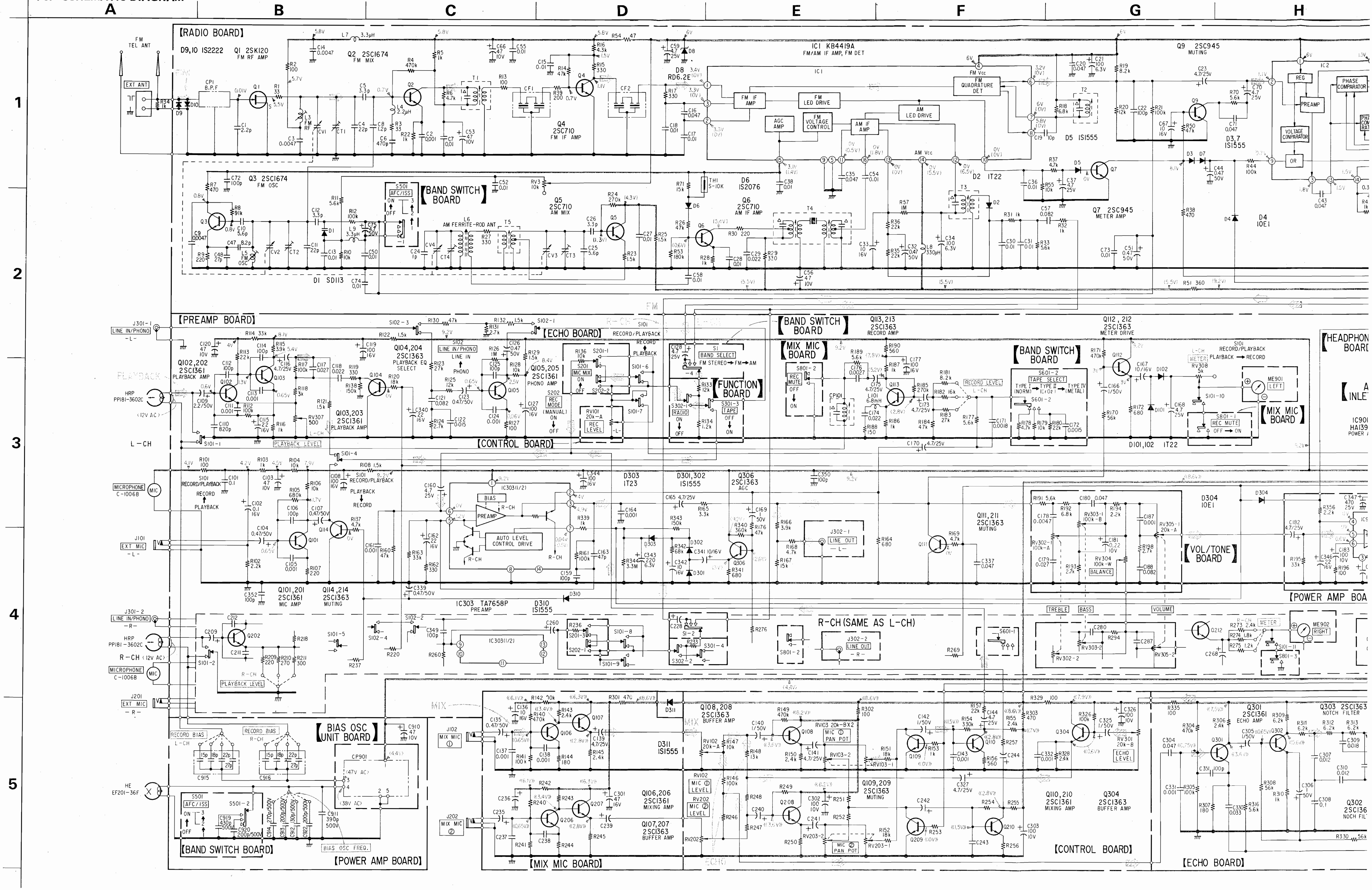
	K	L	M	N	O	P	
	205 114 214 108 204 101 304 203 104 202	103 201 102		305	IC302	IC301 303 302 301	Q · IC
311			309				D

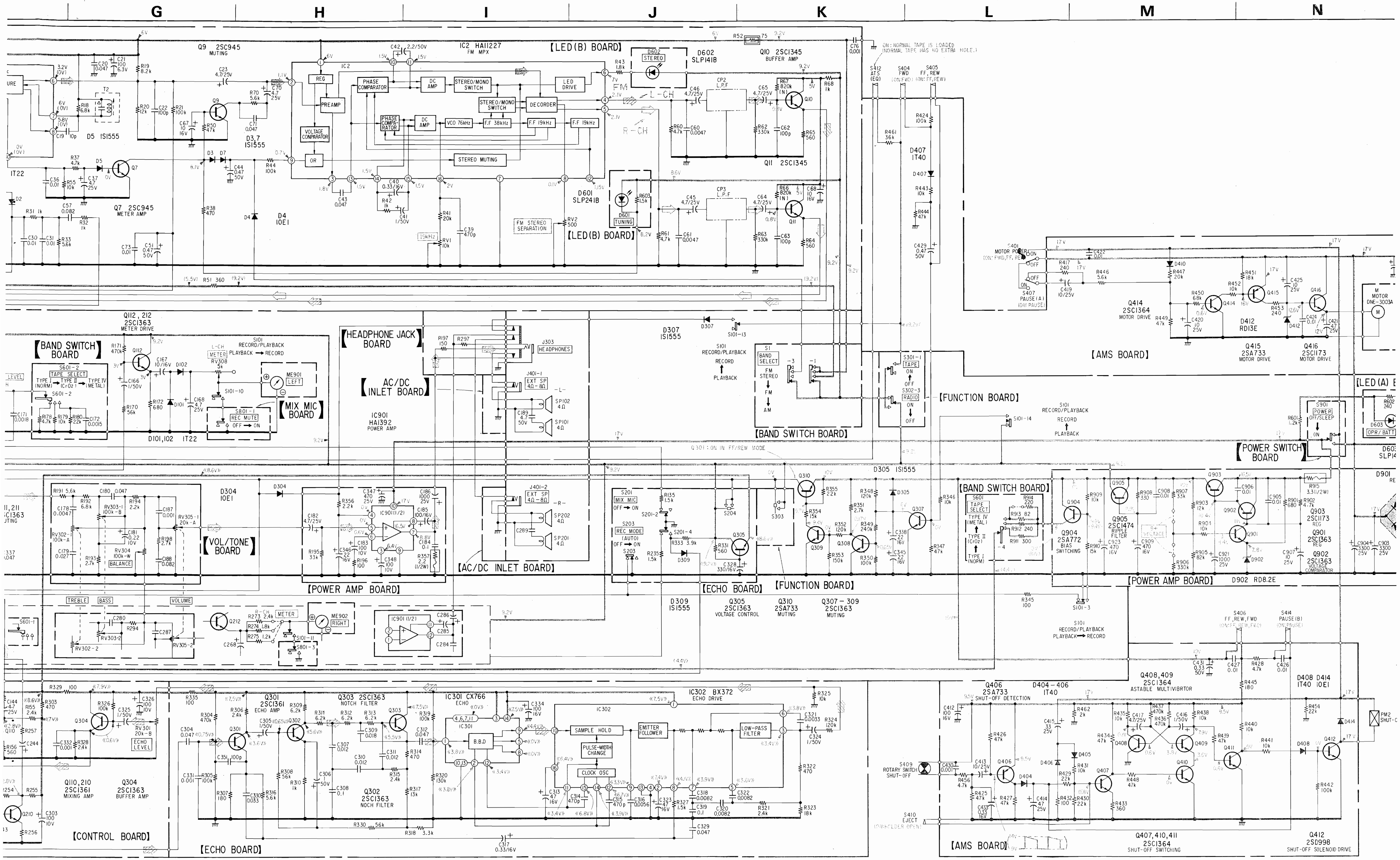


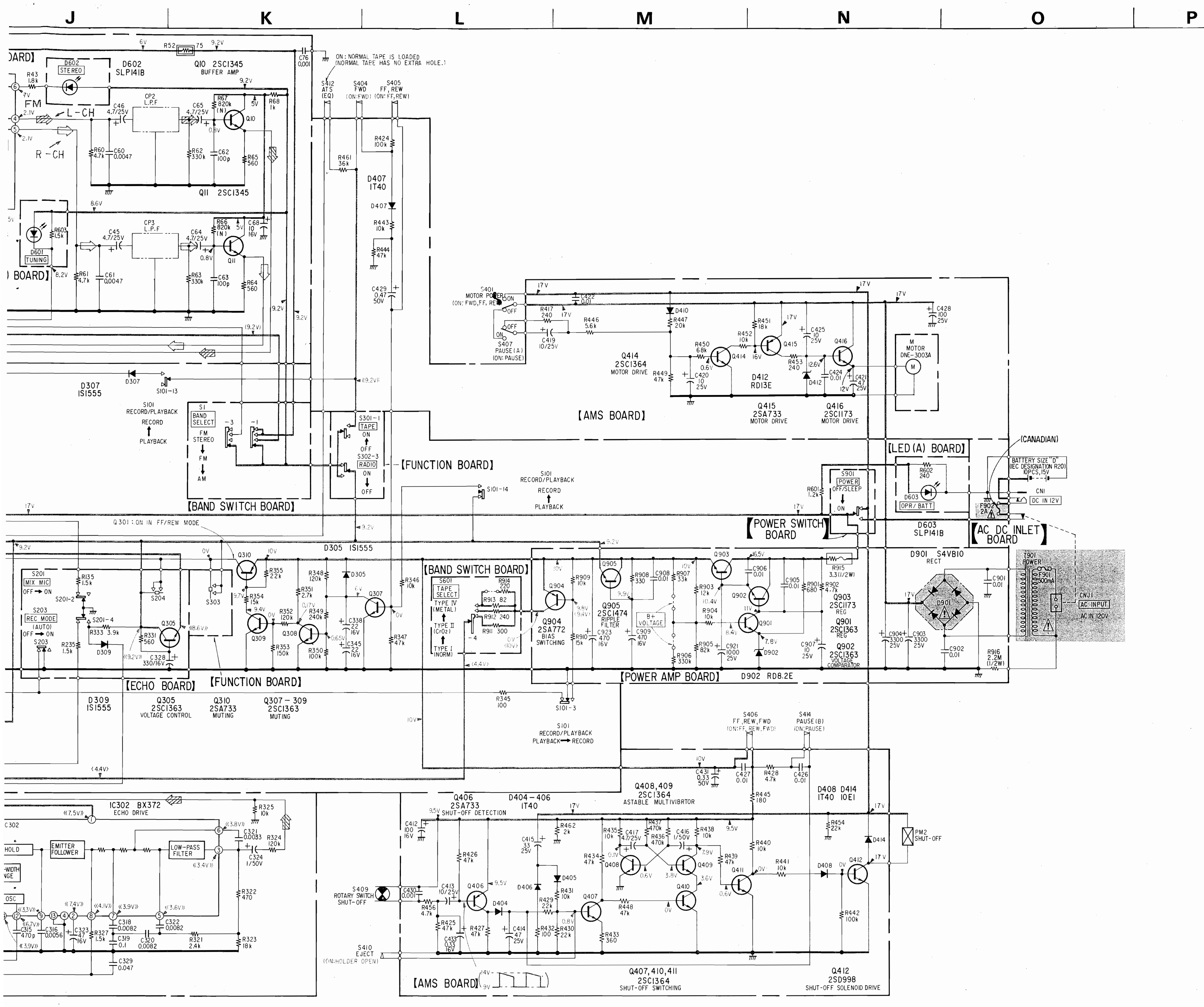
[ECHO BOARD]
[CONNECTION BOARD]
[FUNCTION BOARD]
[BAND SWITCH BOARD]
TO AMS BOARD
MICROPHONE -L-
MICROPHONE -R-
PLAYBACK INPUT R-CH
PLAYBACK INPUT L-CH
HE
HRP
S203 (AUTO) ON OFF
S202 (MANUAL) ON OFF
MIC MIX ON OFF
REC MODE
S201
S301 TAPE ON OFF
S302 RADIO ON OFF
S303
S1 BAND SELECT FM STEREO FM AM
S601 TAPE SELECT TYPE I (NORM) TYPE II (CrO2) TYPE IV (METAL)
S501 AFC/ISS ON OFF
TO RADIO BOARD
FM
RV202 MIC ② LEVEL
RV102 MIC ① LEVEL
RV103 MIC ① PAN POT
RV301 ECHO LEVEL
J101 EXT MIC -L-
J201 EXT MIC -R-
IC302 BX372
LOW-PASS FILTER
EMITTER FOLLOWER
SAMPLE HOLD
PULSE-WIDTH CHANGE
CLOCK OSC
IC301 CX766
B.B.D
WHT
RED
(RED)((GRY))
1
2
3
4
5

- [ ]⊢ : indicates side identified with part number.
- Color code of sleeving over the end of the jacket.
- ▨ : B+ pattern
- ━ ➡ ━ : signal path
- ━━ ➡ : L-CH signal path
- ━━ ➡ : R-CH signal path

4-3. SCHEMATIC DIAGRAM


A
B
C
D
E
F
G
H
1
2
3
4
5
【RADIO BOARD】
FM TEL ANT
EXT ANT
D9,10 IS2222
Q1 2SK120 FM RF AMP
Q2 2SC1674 FM MIX
Q3 2SC1674 FM OSC
Q4 2SC710 FM IF AMP
Q5 2SC710 AM MIX
Q6 2SC710 AM IF AMP
D6 IS2076
D8 RD6.2E
IC1 KB4419A FM/AM IF AMP, FM DET
FM IF AMP
FM LED DRIVE
FM VOLTAGE CONTROL
AGC AMP
AM IF AMP
AM LED DRIVE
FM QUADRATURE DET
AM Vcc
FM Vcc
D5 IS1555
Q7 2SC945 METER AMP
Q9 2SC945 MUTING
D3,7 IS1555
D4 10E1
IC2
REG
PREAMP
PHASE COMPARATOR
VOLTAGE COMPARATOR
OR
【BAND SWITCH BOARD】
S501 AFC/ISS
L6 AM FERRITE-ROD ANT
D1 SD113
【PREAMP BOARD】
J301-1 LINE IN/PHONO -L-
HRP PP181-3602C
L-CH
Q102,202 2SC1361 PLAYBACK AMP
Q103,203 2SC1361 PLAYBACK AMP
Q104,204 2SC1363 PLAYBACK EQ SELECT
Q105,205 2SC1361 PHONO AMP
PLAYBACK LEVEL
【ECHO BOARD】
S102 LINE IN/PHONO
S201 MIC MIX
S202 REC MODE (MANUAL)
RV101 REC LEVEL
S101 RECORD/PLAYBACK
【CONTROL BOARD】
S1 BAND SELECT FM STEREO→FM→AM
【FUNCTION BOARD】
S302-1 RADIO
S301-3 TAPE
【BAND SWITCH BOARD】
Q113,213 2SC1363 RECORD AMP
【MIX MIC BOARD】
S801-2 REC MUTE
RECORD LEVEL
S601-2 TAPE SELECT TYPE I (NORM) → TYPE II (CrO2) → TYPE IV (METAL)
Q112,212 2SC1363 METER DRIVE
S101 RECORD/PLAYBACK PLAYBACK → RECORD
METER
ME901 LEFT
S801-1 REC MUTE OFF → ON
D101,102 1T22
【HEADPHONE BOARD】
MICROPHONE C-1006B
J101 EXT MIC -L-
Q101,201 2SC1361 MIC AMP
Q114,214 2SC1363 MUTING
IC303 TA7658P PREAMP
IC303(1/2)
BIAS
AUTO LEVEL CONTROL DRIVE
D310 IS1555
D303 1T23
D301,302 IS1555
Q306 2SC1363 AGC
J302-1 LINE OUT -L-
Q111,211 2SC1363 MUTING
D304 10E1
RV304 BALANCE
【VOL/TONE BOARD】
TREBLE
BASS
VOLUME
【POWER AMP BOARD】
J301-2 LINE IN/PHONO -R-
R-CH (12V AC)
J201 EXT MIC -R-
R-CH (SAME AS L-CH)
J302-2 LINE OUT -R-
ME902 RIGHT
【BIAS OSC UNIT BOARD】
RECORD BIAS L-CH
RECORD BIAS R-CH
CP901
HE EF201-36F
S501 AFC/ISS
【BAND SWITCH BOARD】
BIAS OSC FREQ.
【POWER AMP BOARD】
J102 MIX MIC ①
J202 MIX MIC ②
Q106,206 2SC1361 MIXING AMP
Q107,207 2SC1363 BUFFER AMP
D311 IS1555
Q108,208 2SC1363 BUFFER AMP
RV102 MIC ① LEVEL
RV202 MIC ② LEVEL
RV103 20k-BX2 MIC ① PAN POT
MIC ② PAN POT
Q109,209 2SC1363 MUTING
Q110,210 2SC1361 MIXING AMP
Q304 2SC1363 BUFFER AMP
ECHO LEVEL
【MIX MIC BOARD】
【CONTROL BOARD】
Q301 2SC1361 ECHO AMP
Q303 2SC1363 NOTCH FILTER
Q302 2SC1363 NOCH FILTER
【ECHO BOARD】


G
H
I
J
K
L
M
N
Q9 2SC945 MUTING
IC2 HA11227 FM MPX
【LED(B) BOARD】
D602 SLP141B
Q10 2SC1345 BUFFER AMP
ON: NORMAL TAPE IS LOADED (NORMAL TAPE HAS NO EXTRA HOLE.)
S412 ATS (EQ)
S404 FWD
S405 FF, REW
PHASE COMPARATOR
DC AMP
STEREO/MONO SWITCH
LED DRIVE
REG
PREAMP
DECORDER
VOLTAGE COMPARATOR
VCO 76kHz
F.F 38kHz
F.F 19kHz
OR
STEREO MUTING
CP2 L.P.F
CP3 L.P.F
Q11 2SC1345
D601 SLP241B
D601 TUNING
FM STEREO SEPARATION
D5 1S1555
D3,7 1S1555
D4 10E1
Q7 2SC945 METER AMP
D407 1T40
Q112, 212 2SC1363 METER DRIVE
【BAND SWITCH BOARD】
S601-2 TAPE SELECT
TYPE I (NORM)
TYPE II (CrO2)
TYPE IV (METAL)
S101 RECORD/PLAYBACK
METER
RV308
PLAYBACK → RECORD
ME901 LEFT
【MIX MIC BOARD】
S801-1 REC MUTE OFF → ON
D101,102 1T22
【HEADPHONE JACK BOARD】
J303 HEADPHONES
【AC/DC INLET BOARD】
IC901 HA1392 POWER AMP
J401-1 EXT SP 4Ω-8Ω
SP102 4Ω
SP101 4Ω
D307 1S1555
S101 RECORD/PLAYBACK RECORD PLAYBACK
S1 BAND SELECT
FM STEREO
FM
AM
【BAND SWITCH BOARD】
S301-1 TAPE
S302-3 RADIO
【FUNCTION BOARD】
S401 MOTOR POWER
S407 PAUSE(A)
Q414 2SC1364 MOTOR DRIVE
D412 RD13E
Q415 2SA733 MOTOR DRIVE
Q416 2SC1173 MOTOR DRIVE
【AMS BOARD】
M MOTOR DNE-3003A
【LED(A)】
S901 POWER OFF/SLEEP
【POWER SWITCH BOARD】
D603 OPR/BATT
RV302-1
RV303-1
BALANCE
RV305-1
【VOL/TONE BOARD】
D304 10E1
【POWER AMP BOARD】
IC901(1/2)
J401-2 EXT SP 4Ω-8Ω
SP202 4Ω
SP201 4Ω
【AC/DC INLET BOARD】
S201 MIX MIC OFF → ON
S203 REC MODE (AUTO) OFF → ON
【ECHO BOARD】
【FUNCTION BOARD】
D305 1S1555
【BAND SWITCH BOARD】
S601 TAPE SELECT
TYPE IV (METAL)
TYPE II (CrO2)
TYPE I (NORM)
Q904 2SA772 BIAS SWITCHING
Q905 2SC1474 RIPPLE FILTER
Q903 2SC1173 REG
Q901 2SC1363 REG
Q902 2SC1363 VOLTAGE COMPARATOR
【POWER AMP BOARD】
D902 RD8.2E
D309 1S1555
Q305 2SC1363 VOLTAGE CONTROL
Q310 2SA733 MUTING
Q307-309 2SC1363 MUTING
S101-3
S101 RECORD/PLAYBACK PLAYBACK → RECORD
S406 FF,REW,FWD
S414 PAUSE(B)
TREBLE
BASS
VOLUME
ME902 RIGHT
S801-3
IC901(1/2)
Q301 2SC1361 ECHO AMP
Q303 2SC1363 NOTCH FILTER
IC301 CX766 ECHO
IC302 BX372 ECHO DRIVE
B.B.D
SAMPLE HOLD
EMITTER FOLLOWER
LOW-PASS FILTER
PULSE-WIDTH CHANGE
CLOCK OSC
Q110,210 2SC1361 MIXING AMP
Q304 2SC1363 BUFFER AMP
Q302 2SC1363 NOCH FILTER
【CONTROL BOARD】
ECHO LEVEL
【ECHO BOARD】
Q406 2SA733 SHUT-OFF DETECTION
D404-406 1T40
Q408,409 2SC1364 ASTABLE MULTIVIBRTOR
D408 D414 1T40 10E1
S409 ROTARY SWITCH SHUT-OFF
S410 EJECT
PM2 SHUT-OFF
【AMS BOARD】
Q407,410,411 2SC1364 SHUT-OFF SWITCHING
Q412 2SD998 SHUT-OFF SOLENOID DRIVE


J
K
L
M
N
O
P
1
2
3
4
5
D602 SLP141B
Q10 2SC1345 BUFFER AMP
Q11 2SC1345
FM
L-CH
R-CH
CP2 L.P.F
CP3 L.P.F
D601 TUNING
D602 STEREO
ON: NORMAL TAPE IS LOADED (NORMAL TAPE HAS NO EXTRA HOLE.)
S412 ATS (EQ)
S404 FWD (ON: FWD)
S405 FF, REW (ON: FF, REW)
D407 1T40
S401 MOTOR POWER (ON: FWD, FF, REW)
S407 PAUSE (A) (ON: PAUSE)
Q414 2SC1364 MOTOR DRIVE
Q415 2SA733 MOTOR DRIVE
Q416 2SC1173 MOTOR DRIVE
D412 RD13E
M MOTOR DNE-3003A
[AMS BOARD]
D307 1S1555
S101 RECORD/PLAYBACK
RECORD
PLAYBACK
S1 BAND SELECT
FM STEREO
FM
AM
[BAND SWITCH BOARD]
S301-1 TAPE
S302-3 RADIO
[FUNCTION BOARD]
[LED (A) BOARD]
D603 OPR/BATT
D603 SLP141B
S901 POWER OFF/SLEEP
[POWER SWITCH BOARD]
(CANADIAN)
BATTERY SIZE "D" (IEC DESIGNATION R20) 10PCS, 15V
CN1
DC IN 12V
[AC DC INLET BOARD]
F902 2A
T901 POWER
F901 500mA
AC INPUT AC IN 120V
Q301: ON IN FF/REW MODE
S201 MIX MIC OFF → ON
S203 REC MODE (AUTO) OFF → ON
D305 1S1555
D309 1S1555
Q305 2SC1363 VOLTAGE CONTROL
Q310 2SA733 MUTING
Q307-309 2SC1363 MUTING
[ECHO BOARD]
[FUNCTION BOARD]
[BAND SWITCH BOARD]
S601 TAPE SELECT
TYPE IV (METAL)
TYPE II (CrO2)
TYPE I (NORM)
Q904 2SA772 BIAS SWITCHING
Q905 2SC1474 RIPPLE FILTER
B+ VOLTAGE
Q903 2SC1173 REG
Q901 2SC1363 REG
Q902 2SC1363 VOLTAGE COMPARATOR
D901 S4VB10 RECT
[POWER AMP BOARD]
D902 RD8.2E
S101 RECORD/PLAYBACK PLAYBACK → RECORD
S406 FF, REW, FWD (ON: FF, REW, FWD)
S414 PAUSE (B) (ON: PAUSE)
Q408,409 2SC1364 ASTABLE MULTIVIBRATOR
D408 D414 1T40 10E1
IC302 BX372 ECHO DRIVE
EMITTER FOLLOWER
LOW-PASS FILTER
Q406 2SA733 SHUT-OFF DETECTION
D404-406 1T40
S409 ROTARY SWITCH SHUT-OFF
S410 EJECT (ON: HOLDER OPEN)
PM2 SHUT-OFF
Q407,410,411 2SC1364 SHUT-OFF SWITCHING
Q412 2SD998 SHUT-OFF SOLENOID DRIVE
[AMS BOARD]

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Note: Les composants identifiés par une trame et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

- Components for right channel have same values as for left channel. Reference numbers are coded from 200.
- All capacitors are in μF unless otherwise noted. pF : μμF 50 WV or less are not indicated except for electrolytics.
- △ : internal component.
- ▭ : panel designation.
- ▭ : adjustment for repair.
- Readings are taken under no-signal (detuned) conditions.

≪ ≫ : MIC MIX (RADIO)
MIC 1, 2 LEVEL: MINIMUM
SOURCE LEVEL: MINIMUM
( ) : AM
< > : RECORD (REC MODE-AUTO)

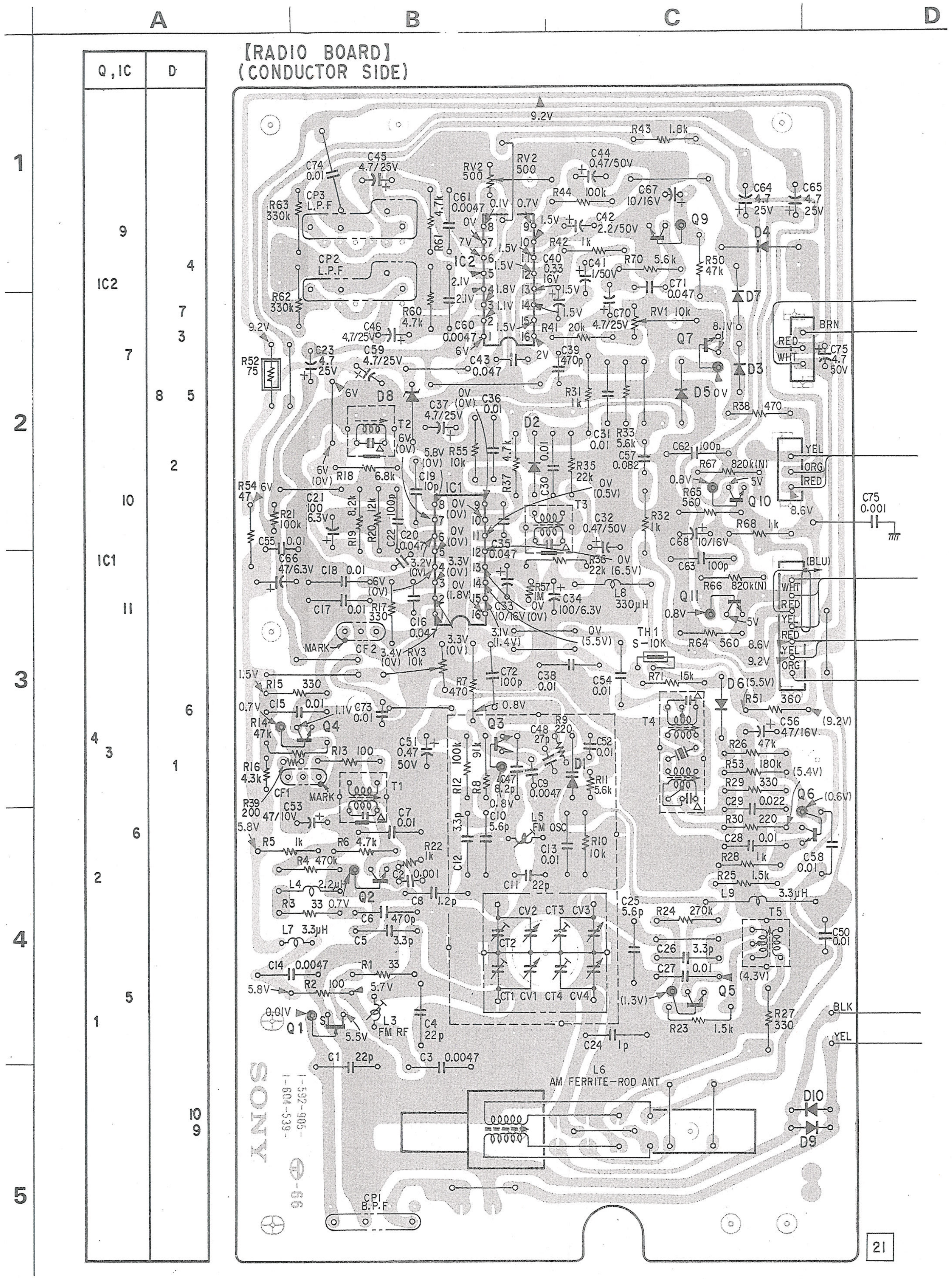
- **Switch**

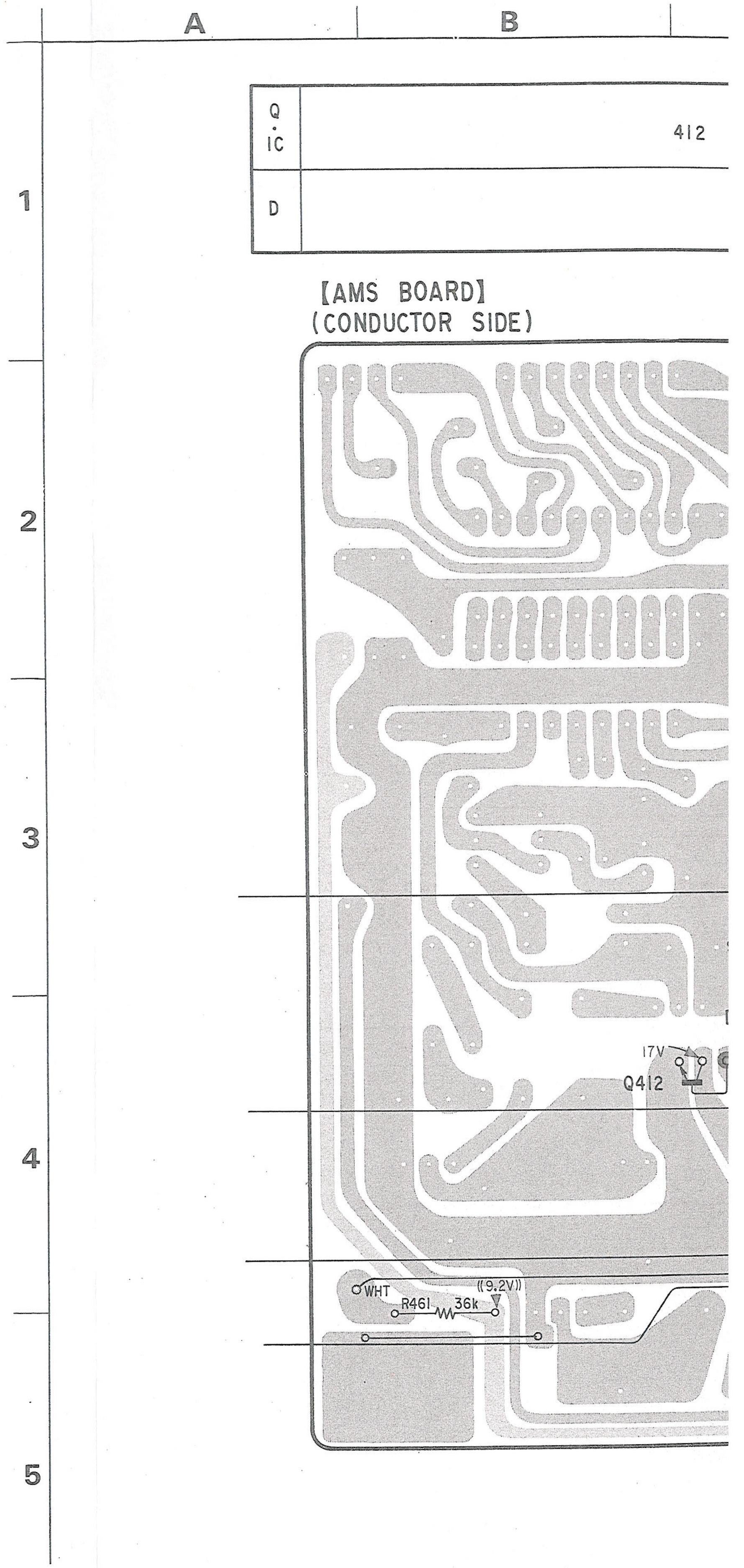
Rif. No.	Switch	Position
S1	BAND SELECT	FM STEREO
S101	REC/PLAYBACK	PLAYBACK
S102	LINE IN/PHONO	PHONO
S201	MIC MIX	OFF
S202	REC MODE (MANUAL)	ON
S203	REC MODE (AUTO)	OFF
S204	MUTING	OFF
S301	TAPE	ON
S302	RADIO	OFF
S303	MUTING	OFF
S401	POWER MOTOR	OFF
S404	FWD	OFF
S405	FF, REW	OFF
S406	FF·REW·FWD	OFF
S407	PAUSE (A)	OFF
S409	SHUT OFF	OFF
S410	EJECT	OFF
S412	ATS (EQ)	OFF
S414	PAUSE (B)	OFF
S501	AFC/ISS	OFF
S601	TAPE SELECT	TYPE I (NORM)
S801	REC MUTE	OFF
S901	POWER	OFF/SLEEP

Note: Voltage are measured with a VOM (50kΩ/V).

4-4. MOUNTING DIAGRAM

See page 36 for semiconductor lead layouts.


A
B
C
D
1
2
3
4
5
Q, IC
D
IC2
IC1
【RADIO BOARD】
(CONDUCTOR SIDE)
9.2V
RV2 500
RV1 10k
RV3 10k
CP1 B.P.F
CP2 L.P.F
CP3 L.P.F
CF1
CF2
MARK
T1
T2
T3
T4
T5
TH1 S-10K
L5 FM OSC
L3 FM RF
L6 AM FERRITE-ROD ANT
CV1 CV2 CV3 CV4
CT1 CT2 CT3 CT4
Q1 Q2 Q3 Q4 Q5 Q6 Q7 Q9 Q10 Q11
D1 D2 D3 D4 D5 D6 D7 D8 D9 D10
BRN
RED
WHT
YEL
ORG
BLU
BLK
SONY
1-592-905-
1-604-539-
21

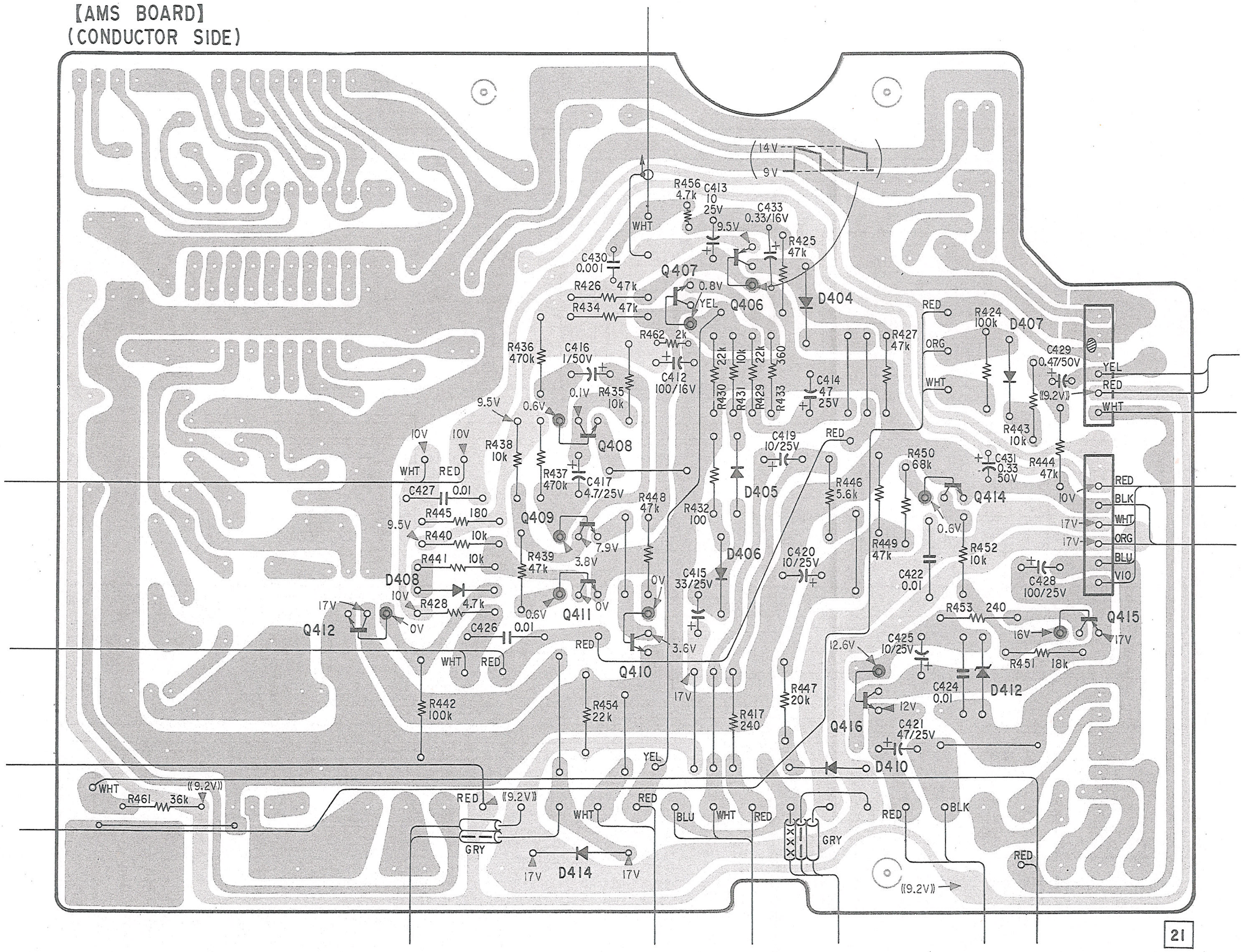

A
B
1
2
3
4
5
Q
IC
D
412
【AMS BOARD】
(CONDUCTOR SIDE)
Q412
17V
WHT
R461 36k
(9.2V)

A B C D E F G

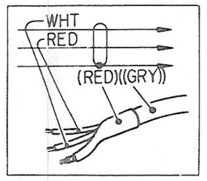
Q • IC	412 408 409 411 410 407 406 416 414 415
D	408 414 405 406 404 410 412 407

1 2 3 4 5

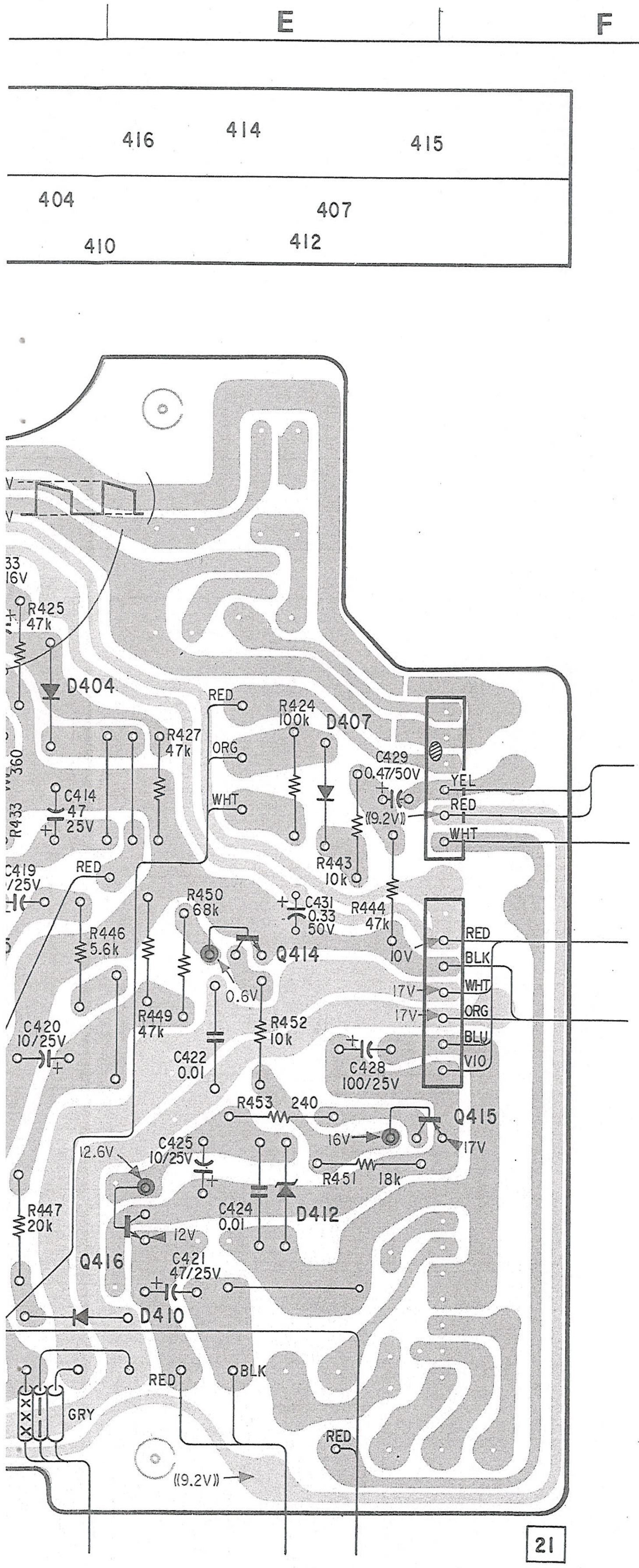
【AMS BOARD】
(CONDUCTOR SIDE)


14V
9V
R456 4.7k
C413 10 25V
C433 0.33/16V
WHT
9.5V
R425 47k
C430 0.001
Q407
R426 47k
R434 47k
0.8V
YEL
Q406
D404
R462 2k
C412 100/16V
R436 470k
C416 1/50V
0.1V
R435 10k
R430 22k
R431 10k
R429 22k
R433 360
C414 47 25V
R427 47k
RED
ORG
WHT
R424 100k
D407
C429 0.47/50V
YEL
RED
WHT
((9.2V))
9.5V
0.6V
Q408
10V
10V
WHT
RED
R438 10k
R437 470k
C417 4.7/25V
C419 10/25V
D405
RED
R446 5.6k
R450 68k
R443 10k
C431 0.33 50V
R444 47k
Q414
0.6V
10V
RED
BLK
WHT
ORG
BLU
VIO
17V
17V
C427 0.01
R445 180
9.5V
R440 10k
Q409
R448 47k
R432 100
7.9V
R441 10k
R439 47k
3.8V
D406
C420 10/25V
R449 47k
R452 10k
C422 0.01
C428 100/25V
D408
10V
R428 4.7k
C415 33/25V
0V
17V
Q412
0V
0.6V
Q411
0V
C426 0.01
RED
3.6V
R453 240
Q415
16V
17V
12.6V
C425 10/25V
R451 18k
WHT
RED
Q410
17V
C424 0.01
D412
R442 100k
R454 22k
R417 240
R447 20k
12V
Q416
C421 47/25V
YEL
D410
WHT
R461 36k
((9.2V))
RED
((9.2V))
RED
WHT
BLU
WHT
RED
RED
BLK
GRY
GRY
17V
D414
17V
RED
((9.2V))
21

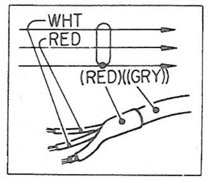
● Color code of sleeving over the end of the jacket.


WHT
RED
(RED)(GRY)

● [⁝]→ : indicates side identified with part number.
● ▨ : B + pattern


E
F
G
416
414
415
404
407
410
412
R425
47k
D404
RED
R424
100k
D407
R427
47k
ORG
WHT
C429
0.47/50V
YEL
RED
WHT
(9.2V)
C414
47
25V
R433
R443
10k
C419
/25V
RED
R450
68k
C431
0.33
50V
R444
47k
R446
5.6k
Q414
10V
RED
BLK
WHT
ORG
BLU
VIO
17V
17V
0.6V
R452
10k
R449
47k
C420
10/25V
C422
0.01
C428
100/25V
R453
240
C425
10/25V
16V
Q415
17V
12.6V
R451
18k
C424
0.01
D412
R447
20k
12V
Q416
C421
47/25V
D410
RED
BLK
GRY
RED
(9.2V)
21

● Color code of sleeving over the end of the jacket.

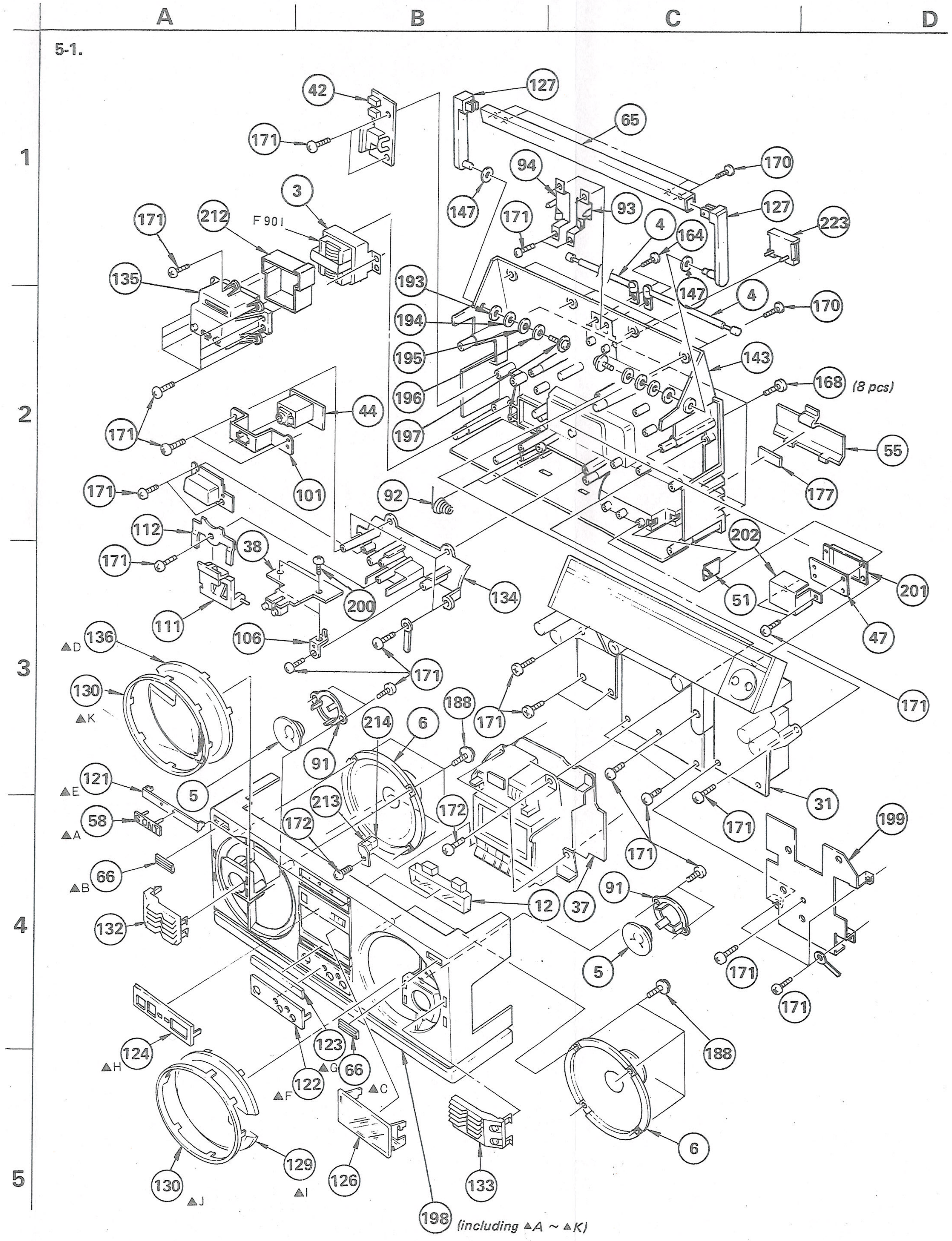

WHT
RED
(RED)(GRY)

● [̲]→ : indicates side identified with part number.

● ▩ : B + pattern

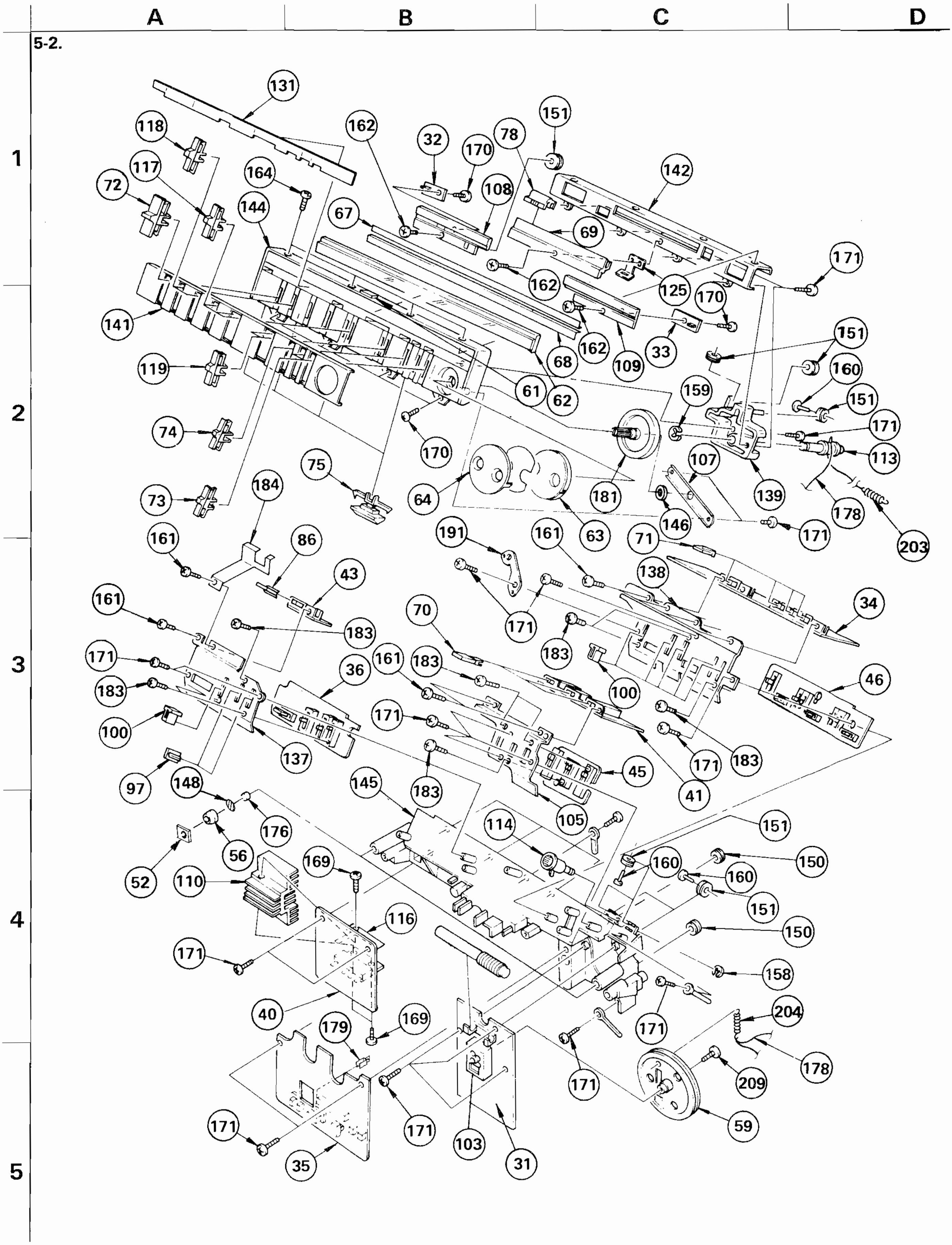
SECTION 5
EXPLODED VIEWS AND PARTS LIST

5-1.

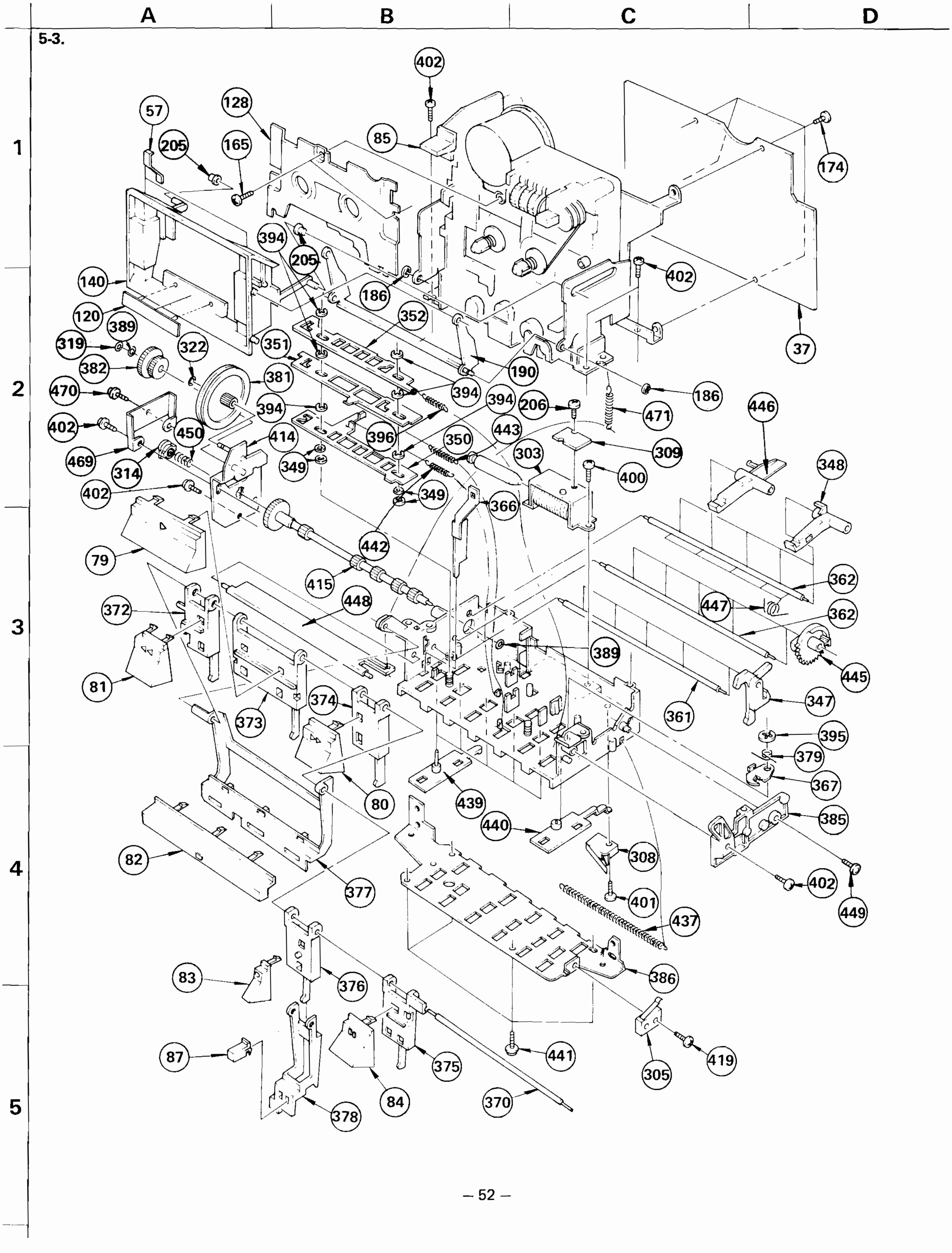

A
B
C
D
1
2
3
4
5
42
127
171
65
170
94
3
147
171
93
127
223
171
212
F901
4
164
135
193
147
4
170
194
195
143
196
168 (8 pcs)
171
44
197
55
171
101
92
177
112
202
171
38
200
134
51
201
111
47
106
▲D
136
171
130
▲K
188
171
171
214
6
91
121
▲E
5
213
172
172
31
58
▲A
171
199
66
▲B
171
12
37
91
132
5
171
188
171
124
▲H
123
▲G
66
▲C
122
▲F
130
▲J
129
▲I
126
133
6
198 (including ▲A ~ ▲K)

A B C D

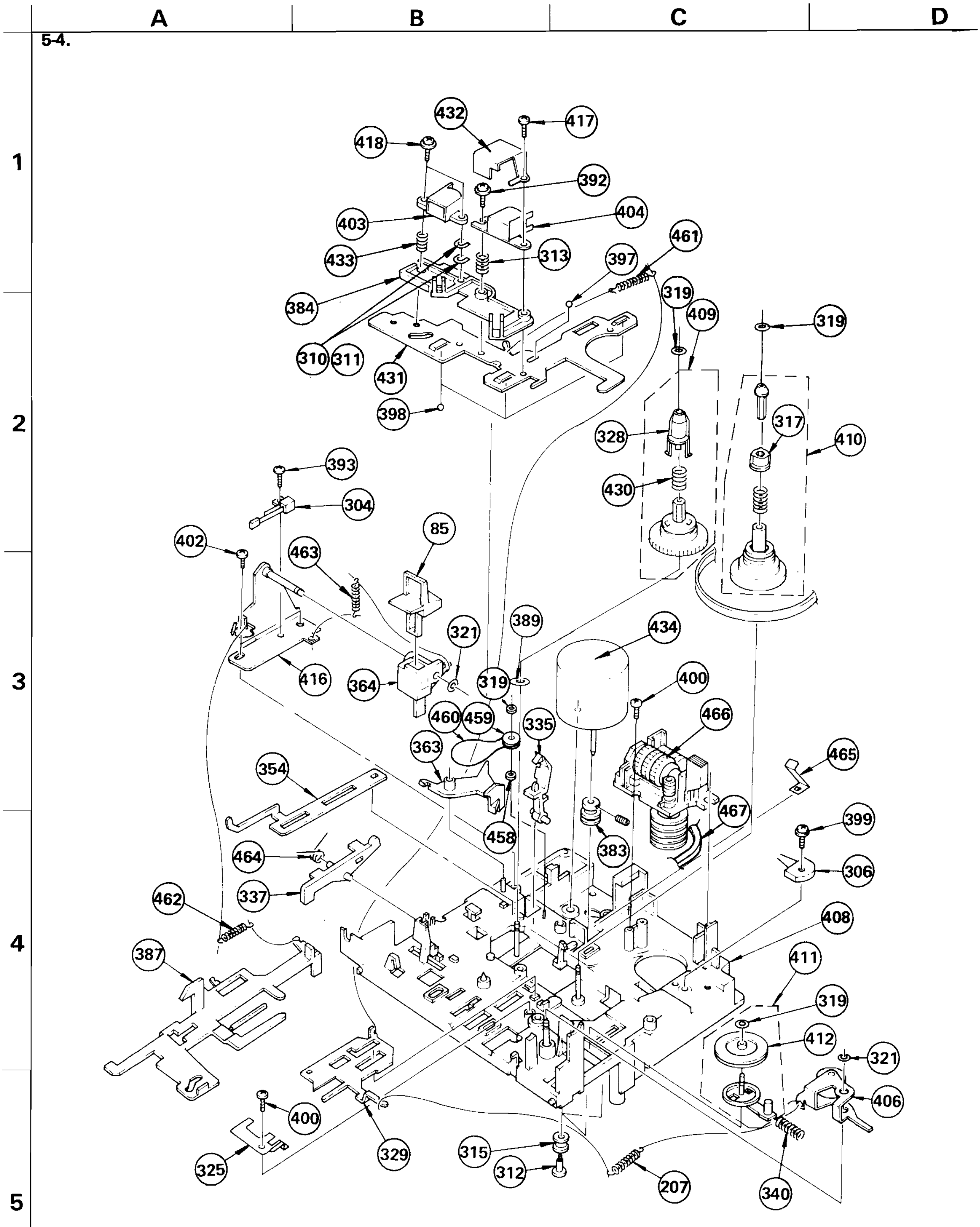
5-2.



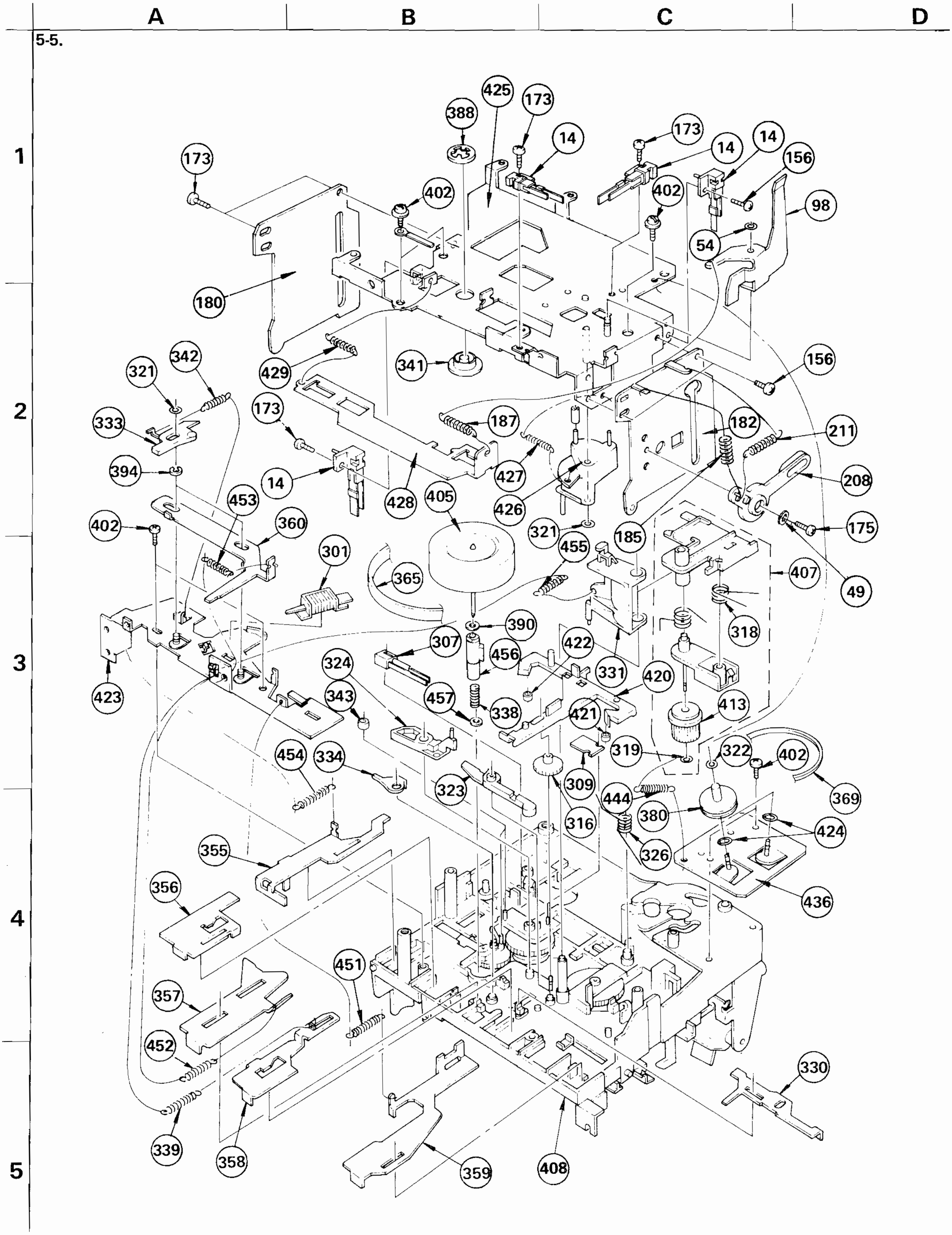
5-3.


A
B
C
D

5-4.


A
B
C
D

5-5.


A
B
C
D

GENERAL SECTION

No.	Part No.	Description
3 ⚠	1-447-094-00	TRANSFORMER, POWER (T901)
4	1-501-226-00	ANTENNA, TELESCOPIC
5	1-503-019-00	SPEAKER
6	1-503-020-00	SPEAKER
7	....	
8 ●;	1-508-819-00	17MM BASE POST
9 ●;	1-508-822-00	17MM BASE POST
10 ●;	1-508-825-00	17MM BASE POST
11	....	
12	1-520-437-00	METER (ME)
13 ●;	1-535-115-00	TERMINAL
14	1-552-804-00	SWITCH, LEAF (S404,405,410,414)
15	....	
21	....	
22	....	
23 ●;	1-560-094-00	PIN, CONNECTOR (7P)
24 ●;	1-561-237-00	CONNECTOR HOUSING (2P)
25	....	
30 ⚠	1-561-322-00	INLET, AC DC
31 ●;	A-3266-139-A	MOUNTED PCB, RADIO
32 ●;	1-604-540-00	PC BOARD, LED (OP)
33 ●;	1-604-541-00	PC BOARD, LED (ST.TU)
34 ●;	A-3281-147-A	MOUNTED PCB, ECHO
35 ●;	A-3270-086-A	MOUNTED PCB, PRE AMPLIFIER
36 ●;	1-604-544-21	PC BOARD, VOL TONE
37 ●;	A-3279-251-A	MOUNTED PCB, AMS
38 ●;	1-604-546-21	PC BOARD, MIX MIC
39	....	
40 ●;	A-3260-123-A	MOUNTED PCB, AMPLIFIER, POWER
41 ●;	1-604-549-21	PC BOARD, FUNCTION
42 ●;	1-604-550-21	PC BOARD, AC DC INLET
43 ●;	1-604-551-21	PC BOARD, POWER SW
44 ●;	1-604-552-21	PC BOARD, HEADPHONE JACK
45 ●;	1-604-553-21	PC BOARD, BAND SW
46 ●;	A-3273-039-A	MOUNTED PCB, CONTROL
47 ●;	1-604-567-00	PC BOARD, EXTENSION
48	....	
49	3-464-123-00	SPACER (DIA. 2.7X0.5)
50	....	
51	3-538-133-00	PLATE, BATTERY CONTACT
52	3-548-352-00	CUSHION, MICROPHONE
53	....	
54	3-558-708-21	WASHER, STOPPER
55	3-560-438-11	LID, BATTERY CASE

GENERAL SECTION

No.	Part No.	Description
56	3-565-331-11	CUSHION, MICROPHONE
57	3-571-315-00	SPRING
58	3-572-504-00	EMBLEM, SONY
59	3-573-012-00	DRUM, DIAL
60	....	
61	3-577-704-00	CAP
62	3-577-705-00	WINDOW, DIAL
63	3-577-706-00	KNOB, TUNING
64	3-577-707-00	ORNAMENT, TUNING KNOB
65	3-577-708-00	HANDLE
66	3-577-709-00	ORNAMENT, MICROPHONE
67 ●;	3-577-710-21	PLATE, BACK
68 ●;	3-577-710-11	PLATE, BACK
69 ●;	3-577-712-00	PLATE (C), BACK
70	3-577-713-00	KNOB, FUNCTION
71	3-577-714-00	KNOB, MODE
72	3-577-715-00	KNOB, CONTROL
73	3-577-718-01	KNOB, SWITCH
74	3-577-718-11	KNOB, SWITCH
75	3-577-719-01	KNOB, BALANCE
76	....	
77	....	
78	3-577-720-00	POINTER
79	3-577-721-00	BUTTON, FWD
80	3-577-722-00	BUTTON, FF
81	3-577-723-00	BUTTON, REW
82	3-577-724-00	BUTTON, STOP
83	3-577-725-D0	BUTTON, REC
84	3-577-726-00	BUTTON, PAUSE
85	3-577-727-00	BUTTON, EJECT
86	3-577-728-00	KNOB, POWER
87	3-577-729-00	BUTTON, REC MUTE
88	....	
89	....	
90	....	
91 ●;	3-577-732-00	RETAINER, TWEETER
92	3-577-733-00	SPRING
93 ●;	3-577-734-00	BOARD (A), TERMINAL, ANTENNA
94 ●;	3-577-735-00	BOARD (B), TERMINAL, ANTENNA
95	....	
96	....	
97	3-577-741-00	ADAPTER, TONE
98 ●;	3-577-742-00	LEVER, REC
99	....	
100	3-577-746-00	ADAPTER, CONTROL

NOTE:
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- Items marked " ● " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part numbers (Δ-ΔΔΔ-ΔΔΔ-XX or Δ-ΔΔΔΔ-ΔΔΔ-X) may be different from those used in the set.

CAPACITORS:
- All capacitors are in μF. Common capacitors are omitted. Refer to the following lists for their part numbers. MF:μF, PF:μμF.

RESISTORS
- All resistors are in ohms. Common 1/4W, 1/8W and 1/16W carbon resistors are omitted. Refer to the following lists for their part numbers.
- F : nonflammable

COILS
- MMH : mH, UH : μH

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Les composants identifiés par une trame et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

GENERAL SECTION

No.	Part No.	Description
101 ●;	3-577-747-00	BRACKET, H.P
102	....	
103 ●;	3-577-802-00	PLATE (A), SHIELD
104	....	
105 ●;	3-577-753-00	HOLDER (C), PC BOARD
106 ●;	3-577-754-00	BRACKET, MIX PC BOARD
107 ●;	3-577-756-00	RETAINER, FLY
108	3-577-757-00	BASE (L), LED
109	3-577-758-00	BASE (R), LED
110 ●;	3-577-759-00	HEAT SINK
111	3-577-760-00	LEVER, REC MUTE
112	3-577-761-00	RETAINER, LEVER, MUTE
113	3-577-762-00	PULLEY (A), MIDWAY
114	3-577-763-00	PULLEY (B), MIDWAY
115	....	
116 ●;	3-577-765-00	RETAINER, HEAT SINK
117	3-577-766-01	KNOB, TONE
118	3-577-766-11	KNOB, TONE
119	3-577-766-21	KNOB, TONE
120	3-577-767-00	ORNAMENT, CASSETTE HOLDER
121	3-577-768-00	PANEL (A), FRONT
122	3-577-769-11	PANEL (B), FRONT
123	3-577-770-11	PANEL (C), FRONT
124	3-577-771-11	PANEL (D), FRONT
125 ●;	3-577-772-00	BRACKET, RELAY
126	3-577-773-00	WINDOW, CASSETTE
127	3-577-774-00	PLATE, SIDE, HANDLE
128 ●;	3-577-775-00	COVER, MD
129	3-577-776-00	NET (R), SPEAKER
130	3-577-777-00	ESCUTCHEON, SPEAKER
131	3-577-778-11	PLATE, ORNAMENTAL, 8 COLOR
132	3-577-779-00	DIFFUSER (L)
133	3-577-780-00	DIFFUSER (R)
134	3-577-781-00	COVER, BATTERY CASE
135 ●;	3-577-782-11	COVER, TRANSFORMER
136	3-577-783-00	NET (L), SPEAKER
137 ●;	3-577-784-00	HOLDER (A), PC BOARD
138 ●;	3-577-785-00	HOLDER (B), PC BOARD
139	3-577-786-00	BASE, PULLEY
140	3-577-787-00	HOLDER, CASSETTE
141	3-577-788-11	PANEL, CONTROL
142 ●;	3-577-789-00	RETAINER, DIAL WINDOW
143	3-577-791-11	CABINET (REAR)
144	3-577-792-11	CABINET (TOP)
145	3-577-793-00	CHASSIS

GENERAL SECTION

No.	Part No.	Description
146 ●;	3-577-798-00	COLLAR
147	3-701-445-11	WASHER, 7
148 ●;	3-577-825-00	CLOTH, DUST PROTECTION
149	....	
150	3-811-140-00	PULLEY
151	3-817-114-00	PULLEY P8
156	7-621-773-95	SCREW +B 2.6X6
157	7-623-508-01	LUG, 3
158	7-624-108-04	STOP RING 4.0, TYPE -E
159	7-624-109-04	STOP RING 5.0, TYPE -E
160	7-625-723-90	RIVET 3X8
161	7-682-146-01	SCREW +P 3X5
162	7-682-248-04	SCREW +K 3X8
163	....	
164	7-682-548-04	SCREW +B 3X8
165	7-685-133-29	SCREW +P 2.6X6 TYPE2 SLIT
166	....	
167	....	
168	7-685-555-19	SCREW +BTP 3X40 TYPE2 N-S
169	7-685-645-71	SCREW +BVTP 3X6 TYPE2 SLIT
170	7-685-647-84	SCREW +BV 3X10 TYPE 2
171	7-685-648-21	SCREW +BVTP 3X12 TYPE2 SLIT
172	7-685-650-21	SCREW +BVTP 3X16 TYPE2 SLIT
173	7-685-862-01	SCREW +BVTT 2.6X6 (S)
174	7-685-871-01	SCREW +BVTT 3X6 (S)
175	7-687-504-31	SCREW,TOTSU PTTWH 2.6X12
176	8-814-194-10	MICRIPHONE C-1006B
177	9-911-815-02	CUSHION
178	9-911-825-42	STRING, DIAL
179	X-3571-402-0	BOARD ASSY, TERMINAL, GROUND
180 ●;	3-577-738-00	PLATE (B), FULCRUM, HOLDER
181	X-3577-704-0	FLYWHEEL ASSY
182 ●;	3-577-736-00	PLATE (A), FULCRUM, HOLDER
183	7-621-775-20	SCREW +B 2.6X5
184 ●;	3-577-800-00	PLATE, CONTACT
185	3-601-380-01	SPRING
186	7-624-105-04	STOP RING 2.3, TYPE -E
187	3-530-249-XX	SPRING, TENSION
188	3-703-136-00	SCREW, TAPPING
189	....	
190	X-3577-706-0	LEVER ASSY, HOLDER FULCRUM
191 ●;	3-577-807-00	PLATE, GROUND
192	....	
193	3-493-850-00	WASHER
194	3-577-814-00	WASHER
195	3-577-815-00	WASHER, PLATE SPRING

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- MMH : mH, UH : μH

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GENERAL SECTION

No.	Part No.	Description
196	3-577-810-00	WASHER
197	3-577-828-00	SCREW, LOCK
198	X-3577-709-1	CABI FRONT ASSY
199	♠;3-577-808-00	PLATE (C), SHIELD
200	7-682-544-04	SCREW +B 3X3
201	♠;3-577-803-00	PLATE (F), SHIELD
202	♠;3-577-805-00	PLATE (G), SHIELD
203	3-701-788-XX	SPRING, TENSION
204	3-571-495-00	SPRING (2), TENSION
205	3-577-799-00	ROLLER, THREADING GUIDE
206	7-685-780-00	SCREW PTT 2X3
207	3-579-026-00	SPRING, TENSION
208	X-3577-707-1	SOFT EJECT ASSY
209	7-621-759-75	+PSW, 2.6X10
210	....	
211	3-531-541-00	SPRING, TENSION
212	♠;3-577-806-00	PLATE, SHIELD, TRANSFORMER
213	♠;3-577-824-11	RETAINER, CUSHION
214	♠;3-561-428-00	CUSHION (20X20X20)
215	3-701-439-11	WASHER 0.25
216	♠;1-605-053-21	PC BOARD, OSCILLATION PACK
217	♠;1-535-249-00	TERMINAL, CONNECTOR

ACCESSORY & PACKING MATERIAL

No.	Part No.	Description
251	1-551-504-00	CORD, POWER
252	1-561-235-00	ANTENNA CONNECTOR, 2P
253	3-577-796-00	CUSHION (R)
254	3-577-797-00	CUSHION (L)
255	3-577-823-00	BAG, PROTECTION
256	♠;3-577-830-00	STICKER, POP
257	3-577-831-00	INDIVIDUAL CARTON
258	3-701-632-00	BAG, POLYETHYLENE
259	....	
260	3-703-133-00	(US)...TAG, CAUTION, ANTENNA
261	3-703-157-01	LABEL, DESTINATION
262	3-703-390-01	(US)...INSTRUCTION
263	3-783-497-21	MANUAL, INSTRUCTION
264	3-783-497-31	(Canadian)...MANUAL, INSTRUCTION
265	3-793-828-11	QUESTIONNAIRE
266	8-893-528-10	(Canadian)···TAPE

MECHANISM SECTION

No.	Part No.	Description
301	1-454-255-00	SOLENOID, PLUNGER
302	....	
303	....	
304	1-514-346-00	SWITCH, LEAF (S412)
305	1-552-665-00	SWITCH, MICRO (S401)
306	1-552-913-31	SWITCH, ROTARY (S409)
307	1-553-490-00	SWITCH, LEAF (S406)
308	1-553-727-00	SWITCH, SLIDE (S407)
309	♠;1-602-735-00	PC BOARD, S.OFF
310	3-513-237-01	PLATE
311	3-513-237-11	PLATE
312	3-533-254-11	SCREW, MOTOR
313	3-539-237-00	SPRING (3), COMPRESSION
314	3-545-403-00	BEARING
315	3-548-886-00	CUSHION (B), MOTOR
316	3-558-620-00	GEAR, REWIND
317	3-558-621-00	CLAW, REEL TABLE
318	3-558-652-00	SPRING
319	3-558-708-01	WASHER, STOPPER
320	3-558-708-11	WASHER, STOPPER
321	3-558-708-21	WASHER, STOPPER
322	3-559-408-00	POLY-WASHER, 1.2 DIA
323	3-561-818-00	LEVER, REVIEW
324	3-561-839-00	LEVER, FF
325	3-561-852-00	SPRING
326	3-564-327-00	SPRING
327	....	
328	3-564-335-00	TABLE (B), REEL, S SIDE
329	♠;3-573-401-00	LEVER, RP (SS)
330	♠;3-573-413-00	LEVER, REC (BSS)
331	♠;3-579-028-00	LEVER (C), REC
332	....	
333	3-573-426-00	LEVER (SS), RELEASE, SHUT-OFF
334	♠;3-573-427-00	LEVER, REC (ASS)
335	3-573-438-00	CLAW, RECORDING SAFETY
336	....	
337	3-573-451-00	LEVER (SS), EJECT LOCK
338	3-573-461-00	SPRING, COMPRESSION
339	3-573-462-00	SPRING, TENSION
340	3-573-464-00	SPRING, COMPRESSION
341	3-573-467-00	RETAINER (D), THRUST
342	3-573-468-00	SPRING, TENSION
343	3-573-469-00	RETAINER, LEAD, SD
344	....	
345	....	

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CAPACITORS:

- All capacitors are in μF. Common capacitors are omitted. Refer to the following lists for their part numbers.
MF:μF, PF:μμF.

RESISTORS

- All resistors are in ohms. Common 1/4W, 1/8W and 1/16W carbon resistors are omitted. Refer to the following lists for their part numbers.
- F : nonflammable

COILS

- MMH : mH, UH : μH

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

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MECHANISM SECTION

No.	Part No.	Description
346	....	
347	3-578-303-00	ARM, SELECTION
348	3-578-304-00	ARM, DRIVING
349	3-579-049-00	SPACER (S11)
350	♠;3-579-030-00	PLATE, LOCK
351	♠;3-578-308-00	PLATE, PREVENTION, REC
352	♠;3-578-309-00	PLATE, PREVENTION, FR
353	....	
354	♠;3-578-311-00	LEVER (S1), RECORD PREVENTION
355	♠;3-578-312-00	LEVER, PAUSE
356	♠;3-578-313-00	LEVER, REC
357	♠;3-578-314-00	LEVER (S1), FF
358	♠;3-578-315-00	LEVER, FWD
359	♠;3-578-316-00	LEVER, REW
360	♠;3-578-317-00	LEVER, SHUT-OFF
361	♠;3-578-319-00	SHAFT, ARM, SELECTION
362	♠;3-578-320-00	SHAFT, GEAR, CAM
363	3-578-324-00	LEVER, DETECTION
364	3-578-327-00	LEVER (B), EJECT
365	3-578-328-00	BELT, CAPSTAN
366	♠;3-578-329-00	LEVER (C), RECORD PREVENTION
367	3-578-331-00	PLATE, LOCK, PAUSE
368	....	
369	3-578-335-00	BELT
370	♠;3-578-336-00	SHAFT, BUTTON, CONTROL
371	....	
372	3-578-338-00	BUTTON, REW
373	3-578-339-00	BUTTON, FWD
374	3-578-340-00	BUTTON, FF
375	3-578-341-00	BUTTON, PAUSE
376	3-578-342-00	BUTTON, REC
377	3-578-343-00	BUTTON, STOP
378	3-578-344-00	BUTTON, REC MUTE
379	3-578-345-00	SPRING
380	3-578-346-00	PULLEY (A)
381	3-578-347-00	PULLEY (B)
382	3-578-348-00	GEAR (A)
383	X-3578-317-1	MOTOR PULLEY ASSY
384	♠;3-578-360-00	BRACKET (S1), HEAD
385	3-578-361-00	RETAINER, CHASSIS
386	♠;3-578-362-00	RETAINER, CONTROL LEVER
387	3-578-363-00	LEVER (A), EJECT
388	♠;3-638-192-00	RING, RETAINING (TYPE CS)
389	3-701-437-01	WASHER
390	3-701-438-11	WASHER, 2.5

MECHANISM SECTION

No.	Part No.	Description
391	....	
392	3-701-465-00	SCREW, LOCK
393	7-621-772-18	SCREW +B 2X4
394	7-624-118-01	RING, RETAINING E-2.5
395	7-624-190-11	STOP RING 3, TYPE-CS
396	....	
397	7-671-112-01	STEEL, BALL
398	7-671-113-01	STEAL, BALL 3
399	7-687-106-21	SCREW, TOTSU PTP 2X10 TYPE2 SLIT
400	7-687-134-21	SCREW, TOTSU PTP 2.6X8 TYPE2
401	7-687-207-21	PTPWH 2X12, TYPE 2, SLIT
402	7-687-234-21	SCREW, TOTSU PTPWH 2.6X8, TYPE2
403	8-825-724-60	HEAD, ERASE (EF-201-36F)
404	8-829-373-30	HEAD, REC/PB (PP181-3602C)
405	A-2109-005-A	FLYWHEEL ASSY (SS)
406	A-2110-005-A	PINCH ROLLER ASSY
407	A-2136-012-A	IDLER COMPLETE ASSY (SS), FR
408	A-3102-034-A	CHASSIS SUB ASSY (S1), MECH
409	A-3130-024-A	TABLE ASSY, REEL, S SIDE
410	A-3130-020-A	TABLE ASSY, REEL, T SIDE
411	A-3136-014-A	IDLER COMPLETE ASSY, FWD
412	X-3561-801-0	IDLER ASSY, FWD
413	X-3563-902-0	IDLER ASSY, FR
414	♠;X-3578-302-0	BRACKET ASSY, GEAR
415	X-3578-303-0	SHAET ASSY, GEAR
416	♠;X-3578-322-0	BRACKET, SWITCH
417	7-621-772-98	+B 2X7
418	7-685-855-01	SCREW, +BVTT 2X10
419	7-621-257-55	SCREW +P 2.3X8
420	♠;3-579-001-00	BRAKE (R)
421	3-538-051-00	RUBBER, BRAKE
422	3-579-008-00	RUBBER (S1), BRAKE
423	♠;X-3578-311-0	RETAINER (S1) ASSY, LEVER
424	3-547-734-00	WASHER
425	♠;X-3578-316-0	RETAINER (S1) ASSY, THRUST
426	3-579-020-00	LEVER, F.R SWITCH
427	3-578-399-00	SPRING, TENSION
428	♠;3-577-743-00	SLIDER, REC
429	3-578-394-00	SPRING, TENSION
430	3-489-043-00	SPRING, COMPRESSION
431	♠;X-3578-315-0	BASE ASSY, HEAD
432	♠;3-579-011-00	PLATE, SHIELD, HEAD
433	3-574-470-00	SPRING, COMPRESSION
434	8-835-033-01	MOTOR, DC (DNE-3001A)
435	....	

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- All capacitors are in μF. Common capacitors are omitted. Refer to the following lists for their part numbers.
MF:μF, PF:μμF.

RESISTORS

- All resistors are in ohms. Common 1/4W, 1/8W and 1/16W carbon resistors are omitted. Refer to the following lists for their part numbers.
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MECHANISM SECTION

No.	Part No.	Description
436♠	;X-3578-310-0	BRACKET ASSY, PULLEY
437	3-554-710-00	SPRING, TENSION
438	....	
439	X-3578-313-0	LEVER (R) ASSY, CONTROL
440	X-3578-312-0	LEVER (P) ASSY, CONTROL
441	7-687-233-21	SCREW, TOTSU PTPWH 2.6X6, TYPE2
442	3-578-391-00	SPRING, TENSION
443	3-578-392-00	SPRING, TENSION
444	3-578-396-00	SPRING, TENSION
445	3-579-015-00	GEAR, CAM
446	3-579-002-00	ARM (F), DRIVING
447	3-579-005-00	SPRING
448♠	;X-3578-309-0	PLATE (P) ASSY, FUNCTION, SWITCH
449	7-687-234-11	SCREW, TOTSU PTPWH 2.6X8, TYPE2
450	3-561-843-00	SPRING, COMPRESSION
451	3-578-397-00	SPRING, TENSION
452	3-578-388-00	SPRING, TENSION
453	3-578-393-00	SPRING, TENSION
454	3-578-389-00	SPRING, TENSION
455	3-578-390-00	SPRING, TENSION
456	3-579-016-00	PULLEY, DRIVING
457	3-579-003-00	WASHER (S)
458	3-701-437-21	WASHER
459	X-3570-020-6	PULLEY, MOTOR (2400)
460	3-570-910-00	BELT, DRIVING
461	3-578-387-00	SPRING, TENSION
462	3-578-395-00	SPRING, TENSION
463	3-578-398-00	SPRING, TENSION
464	3-558-606-00	SPRING
465	3-579-019-00	SPRING
466	1-548-545-31	COUNTER, TAPE (WITH ROTARY SW)
467	3-527-153-XX	BELT (C)
468	....	
469♠	;3-579-004-00	ARM, GEAR
470	7-621-959-35	SCREW,TOTSU PWH 2.6X5
471	3-579-048-00	SPRING, TENSION

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
C39	1-130-014-00	FILM	470PF	5%	50V
C314	1-130-014-00	FILM	470PF	5%	50V
C315	1-130-014-00	FILM	470PF	5%	50V
C915	1-107-253-00	MICA	15+18+22+27PF	10%	500V
C916	1-107-253-00	MICA	15+18+22+27PF	10%	500V
CF1	1-527-795-71	FILTER, CERAMIC			
CF2	1-527-795-71	FILTER, CERAMIC			
♠CNJ201	;1-560-093-00	PIN, CONNECTOR (6P)			
♠CNJ202	;1-560-096-00	PIN, CONNECTOR (9P)			
♠CNP1	;1-560-560-00	PIN, CONNECTOR 7P			
♠CNP2	;1-560-556-00	PIN, CONNECTOR 3P			
♠CNP101	;1-560-089-00	PIN, CONNECTOR (2P)			
♠CNP101	;1-560-092-00	PIN, CONNECTOR (5P)			
♠CNP102	;1-560-093-00	PIN, CONNECTOR (6P)			
♠CNP102	;1-560-556-00	PIN, CONNECTOR 3P			
♠CNP103	;1-560-556-00	PIN, CONNECTOR 3P			
♠CNP109	;1-560-561-00	PIN, CONNECTOR 8P			
♠CNP401	;1-560-080-00	PIN, CONNECTOR (2P)			
♠CNP402	;1-560-084-00	PIN, CONNECTOR (6P)			
♠CNP801	;1-560-557-00	PIN, CONNECTOR 4P			
♠CNP802	;1-560-089-00	PIN, CONNECTOR (2P)			
♠CNP901	;1-560-555-00	PIN, CONNECTOR 2P			
♠CNP902	;1-560-557-00	PIN, CONNECTOR 4P			
♠CNP904	;1-560-555-00	PIN, CONNECTOR 2P			
CP1	1-231-392-00	FILTER, BANDPASS			
CP2	1-231-303-00	LOW-PASS FILTER			
CP3	1-231-303-00	LOW-PASS FILTER			
CP101	1-409-334-00	COIL, TRAP			
CP201	1-409-334-00	COIL, TRAP			
CP901	1-464-153-00	UNIT, BIAS OSCILLATOR			
CT1-4 CV1-4	1-151-382-00	CAP, TUNING, POLYETHYLENE			
D1	8-719-768-71	DIODE 1S2687S-1			
D2	8-719-422-21	DIODE 1T22AM			
D3	8-719-815-55	DIODE 1S1555			
D4	8-719-200-02	DIODE 10E2			
D5	8-719-815-55	DIODE 1S1555			
D6	8-719-815-55	DIODE 1S1555			
D7	8-719-815-55	DIODE 1S1555			
D8	8-719-162-07	DIODE RD6.2E			
D9	8-719-815-55	DIODE 1S1555			
D10	8-719-815-55	DIODE 1S1555			
D101	8-719-422-21	DIODE 1T22AM			
D102	8-719-422-21	DIODE 1T22AM			
D201	8-719-422-21	DIODE 1T22AM			
D202	8-719-422-21	DIODE 1T22AM			
D301	8-719-815-55	DIODE 1S1555			

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CAPACITORS:

- All capacitors are in μF. Common capacitors are omitted. Refer to the following lists for their part numbers. MF:μF, PF:μμF.

RESISTORS

- All resistors are in ohms. Common 1/4W, 1/8W and 1/16W carbon resistors are omitted. Refer to the following lists for their part numbers.
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COILS

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ELECTRICAL PARTS

Ref.No.	Part No.	Description
D302	8-719-815-55	DIODE 1S1555
D303	8-719-422-21	DIODE 1T22AM
D304	8-719-200-02	DIODE 10E2
D305	8-719-815-55	DIODE 1S1555
D307	8-719-815-55	DIODE 1S1555
D309	8-719-815-55	DIODE 1S1555
D310	8-719-815-55	DIODE 1S1555
D311	8-719-815-55	DIODE 1S1555
D404	8-719-815-55	DIODE 1S1555
D405	8-719-815-55	DIODE 1S1555
D406	8-719-815-55	DIODE 1S1555
D407	8-719-815-55	DIODE 1S1555
D408	8-719-815-55	DIODE 1S1555
D410	8-719-815-55	DIODE 1S1555
D412	8-719-113-07	DIODE RD13E
D414	8-719-200-02	DIODE 10E2
D601	8-719-922-41	DIODE SLP241B
D602	8-719-900-41	DIODE SLP141B
D603	8-719-900-41	DIODE SLP141B
D901 ⚠	8-719-504-10	DIODE S4VB10
D902	8-719-182-07	DIODE RD8.2E
F901 ⚠	1-532-262-XX	(US)..........FUSE, GLASS TUBE
F901 ⚠	1-532-268-XX	(Canadian)...FUSE, GLASS TUBE
F902 ⚠	1-532-268-99	(Canadian)...FUSE, GLASS TUBE
IC1	8-759-944-20	IC KB4419A
IC2	8-759-312-27	IC HA11227
IC301	8-757-660-00	IC CX-766
IC302	8-749-937-20	IC BX-372
IC303	8-759-276-58	IC TA7658P
IC901	8-759-313-92	IC HA1392
J101	1-507-450-00	JACK
J102	1-507-678-00	JACK
J201	1-507-450-00	JACK
J202	1-507-678-00	JACK
J301	1-507-671-00	PIN JACK 2P
J302	1-507-671-00	PIN JACK 2P
J303	1-507-609-00	JACK (LARGE TYPE)
J401-1,-2	1-507-678-00	JACK
L3	1-459-157-00	COIL
L4	1-408-109-00	MICRO INDUCTOR 2.2UH
L5	1-459-157-00	COIL
L6	1-401-724-00	ANTENNA, FERRITE-ROD MW
L7	1-408-177-00	MICRO INDUCTOR 3.3UH
L8	1-408-135-00	MICRO INDUCTOR 330UH
L9	1-408-111-00	MICRO INDUCTOR 3.3UH
L101	1-408-217-00	MICRO INDUCTOR 6.8MMH
L201	1-408-217-00	MICRO INDUCTOR 6.8MMH
Q1	8-769-111-00	TRANSISTOR 2SK120
Q2	8-729-167-42	TRANSISTOR 2SC1674
Q3	8-729-167-42	TRANSISTOR 2SC1674
Q4	8-729-671-13	TRANSISTOR 2SC710-13
Q5	8-729-671-13	TRANSISTOR 2SC710-13

ELECTRICAL PARTS

Ref.No.	Part No.	Description
Q6	8-729-671-14	TRANSISTOR 2SC710-14
Q7	8-729-663-47	TRANSISTOR 2SC1364
Q9	8-729-663-47	TRANSISTOR 2SC1364
Q10	8-729-663-47	TRANSISTOR 2SC1364
Q11	8-729-663-47	TRANSISTOR 2SC1364
Q101	8-729-665-47	TRANSISTOR 2SC1362
Q102	8-729-665-47	TRANSISTOR 2SC1362
Q103	8-729-665-47	TRANSISTOR 2SC1362
Q104	8-729-663-47	TRANSISTOR 2SC1364
Q105	8-729-665-47	TRANSISTOR 2SC1362
Q106	8-729-665-47	TRANSISTOR 2SC1362
Q107	8-729-663-47	TRANSISTOR 2SC1364
Q108	8-729-663-47	TRANSISTOR 2SC1364
Q109	8-729-663-47	TRANSISTOR 2SC1364
Q110	8-729-663-47	TRANSISTOR 2SC1364
Q111	8-729-663-47	TRANSISTOR 2SC1364
Q112	8-729-663-47	TRANSISTOR 2SC1364
Q113	8-729-663-47	TRANSISTOR 2SC1364
Q114	8-729-663-47	TRANSISTOR 2SC1364
Q201	8-729-665-47	TRANSISTOR 2SC1362
Q202	8-729-665-47	TRANSISTOR 2SC1362
Q203	8-729-665-47	TRANSISTOR 2SC1362
Q204	8-729-663-47	TRANSISTOR 2SC1364
Q205	8-729-665-47	TRANSISTOR 2SC1362
Q206	8-729-665-47	TRANSISTOR 2SC1362
Q207	8-729-663-47	TRANSISTOR 2SC1364
Q208	8-729-663-47	TRANSISTOR 2SC1364
Q209	8-729-663-47	TRANSISTOR 2SC1364
Q210	8-729-663-47	TRANSISTOR 2SC1364
Q211	8-729-663-47	TRANSISTOR 2SC1364
Q212	8-729-663-47	TRANSISTOR 2SC1364
Q213	8-729-663-47	TRANSISTOR 2SC1364
Q214	8-729-663-47	TRANSISTOR 2SC1364
Q301	8-729-665-47	TRANSISTOR 2SC1362
Q302	8-729-663-47	TRANSISTOR 2SC1364
Q303	8-729-663-47	TRANSISTOR 2SC1364
Q304	8-729-663-47	TRANSISTOR 2SC1364
Q305	8-729-663-47	TRANSISTOR 2SC1364
Q306	8-729-663-47	TRANSISTOR 2SC1364
Q307	8-729-663-47	TRANSISTOR 2SC1364
Q308	8-729-663-47	TRANSISTOR 2SC1364
Q309	8-729-663-47	TRANSISTOR 2SC1364
Q310	8-729-612-77	TRANSISTOR 2SA1027R
Q406	8-729-612-77	TRANSISTOR 2SA1027R
Q407	8-729-663-47	TRANSISTOR 2SC1364
Q408	8-729-663-47	TRANSISTOR 2SC1364
Q409	8-729-663-47	TRANSISTOR 2SC1364
Q410	8-729-663-47	TRANSISTOR 2SC1364
Q411	8-729-663-47	TRANSISTOR 2SC1364
Q412	8-729-199-80	TRANSISTOR 2SD998

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ELECTRICAL PARTS

Ref.No.	Part No.	Description
Q414	8-729-663-47	TRANSISTOR 2SC1364
Q415	8-729-612-77	TRANSISTOR 2SA1027R
Q416	8-729-217-33	TRANSISTOR 2SC1173
Q901	8-729-663-47	TRANSISTOR 2SC1364
Q902	8-729-663-47	TRANSISTOR 2SC1364
Q903	8-729-217-33	TRANSISTOR 2SC1173
Q904	8-760-523-10	TRANSISTOR 2SA772-23
Q905	8-760-335-10	TRANSISTOR 2SC1474
R357	1-212-942-00	FUSIBLE 2.2 5% 1/2W F
R915	1-212-946-00	FUSIBLE 3.3 5% 1/2W F
R916	1-202-723-00	COMPOSITION 2.2M 10% 1/2W
RV1	1-226-236-00	RES, ADJ, CARBON 10K
RV2	1-226-232-00	RES, ADJ, CARBON 500
RV3	1-226-236-00	RES, ADJ, CARBON 10K
RV101	1-228-148-00	RES, VAR, SLIDE 20K
RV102	1-228-148-00	RES, VAR, SLIDE 20K
RV103	1-228-149-00	RES, VAR, SLIDE 20K/20K
RV201	1-228-148-00	RES, VAR, SLIDE 20K
RV202	1-228-148-00	RES, VAR, SLIDE 20K
RV203	1-228-149-00	RES, VAR, SLIDE 20K/20K
RV301	1-228-147-00	RES, VAR, SLIDE 20K
RV302	1-228-152-00	RES, VAR, SLIDE 100K/100K
RV303	1-228-150-00	RES, VAR, SLIDE 100K/100K
RV304	1-228-145-00	RES, VAR, SLIDE 100K
RV305	1-228-151-00	RES, VAR, SLIDE 20K/20K
RV307	1-226-232-00	RES, ADJ, CARBON 500
RV308	1-226-235-00	RES, ADJ, CARBON 5K
S1	1-553-663-00	SWITCH, SLIDE
S101	1-553-662-00	SWITCH, SLIDE
S102	1-553-267-00	SWITCH, SLIDE
S201		
S202	1-553-665-00	SWITCH, PUSH (3 KEY)
S203		
S204		
S301		
S302	1-553-664-00	SWITCH, PUSH
S303		
S501	1-552-819-00	SWITCH, SLIDE
S601	1-553-663-00	SWITCH, SLIDE
S801	1-552-645-00	SWITCH, PUSH
S901	1-552-530-00	SWITCH, PUSH
T1	1-403-872-00	I.F.T
T2	1-404-249-00	COIL, FM DETECTOR
T3	1-403-137-00	I.F.T DETECTION
T4	1-403-144-00	I.F.T(TRIPLE TUNE)
T5	1-405-655-00	COIL, MW OSC
TH1	1-800-202-XX	THERMISTOR S-10K

NOTE:
- Items with no part number and no description are not stocked because they are seldom required for routine service.
- Items marked " ♠ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part numbers (Δ-ΔΔΔ-ΔΔΔ-XX or Δ-ΔΔΔΔ-ΔΔΔ-X) may be different from those used in the set.

CAPACITORS:
- All capacitors are in μF. Common capacitors are omitted. Refer to the following lists for their part numbers. MF:μF, PF:μμF.

RESISTORS
- All resistors are in ohms. Common 1/4W, 1/8W and 1/16W carbon resistors are omitted. Refer to the following lists for their part numbers.
- F : nonflammable

COILS
- MMH : mH, UH : μH

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Les composants identifiés par une trame et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

ELECTROLYTIC CAPACITORS

CAP. (μF)	RATING				→ : Use the high voltage rated one.	
	6.3 VOLT.	10 VOLT.	16 VOLT.	25 VOLT.	35 VOLT.	50 VOLT.
	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.
0.47					→	1-121-726-00
1.0					→	1-121-391-00
2.2					→	1-121-450-00
3.3	→	→	→	1-121-392-00	→	1-121-393-00
4.7	→	→	→	1-121-395-00	→	1-121-396-00
10	→	→	1-121-651-00	1-121-398-00	→	1-121-738-00
22	→	→	1-121-479-00	1-121-480-00	1-121-662-00	1-121-152-00
33	→	→	1-121-403-00	1-121-404-00	1-121-652-00	1-121-405-00
47	→	1-121-352-00	1-121-409-00	1-121-410-00	1-121-653-00	1-121-411-00
100	→	1-121-414-00	1-121-415-00	1-121-416-00	1-121-357-00	1-121-417-00
220	1-121-419-00	1-121-420-00	1-121-421-00	1-121-422-00	1-121-261-00	1-121-423-00
330	1-121-751-00	1-121-805-00	1-121-521-00	1-121-654-00	1-121-655-00	1-121-656-00
470	1-121-424-00	1-121-425-00	1-121-426-00	1-121-733-00	1-121-361-00	1-121-810-00
1000	–	1-121-736-00	1-121-245-00	1-121-657-00	1-121-388-00	1-123-061-00
2200	1-121-658-00	1-121-659-00	1-121-660-00	1-123-067-00	1-121-984-00	–
3300	1-121-661-00	1-123-075-00	1-123-071-00	–	–	–

CAP. (μF)	100 VOLT.	160 VOLT.	250 VOLT.	350 VOLT.
	PART No.	PART No.	PART No.	PART No.
0.47	–	–	–	–
1.0	1-123-249-00	1-123-252-00	1-123-003-00	1-121-168-00
2.2	1-123-250-00	1-123-026-00	–	1-123-028-00
3.3	1-121-995-00	–	1-123-004-00	1-123-006-00
4.7	1-123-255-00	1-121-246-00	1-121-759-00	1-123-007-00
10	1-121-126-00	1-121-999-00	1-123-254-00	1-123-008-00
22	1-121-996-00	1-123-253-00	1-123-005-00	1-123-022-00
33	1-121-997-00	1-121-757-00	–	–
47	1-123-251-00	1-121-919-00	–	–
100	1-123-084-00	–	–	–

CERAMIC CAPACITORS

	RATING						
CAP. (pF)	50 VOLT.	CAP. (pF)	50 VOLT.	CAP. (pF)	50 VOLT.	CAP. (μF)	50 VOLT.
	PART No.		PART No.		PART No.		PART No.
0.5	1-101-837-00	22	1-102-959-00	150	1-101-361-00	0.001	1-102-074-00
0.75	1-101-586-00	24	1-102-960-00	160	1-101-367-00	0.0012	1-102-118-00
1.0	1-102-934-00	27	1-102-961-00	180	1-102-976-00	0.0015	1-102-119-00
1.5	1-101-576-00	30	1-102-962-00	200	1-102-977-00	0.0018	1-102-120-00
2.0	1-102-935-00	33	1-102-963-00	220	1-102-978-00	0.0022	1-102-121-00
3	1-102-936-00	36	1-102-964-00	240	1-102-979-00	0.0027	1-102-122-00
4	1-102-937-00	39	1-102-965-00	270	1-102-980-00	0.0033	1-102-123-00
5	1-102-942-00	43	1-102-966-00	300	1-102-981-00	0.0039	1-102-124-00
6	1-102-943-00	47	1-101-880-00	330	1-102-820-00	0.0047	1-102-125-00
7	1-102-944-00	51	1-101-882-00	360	1-102-821-00	0.0056	1-102-126-00
8	1-102-945-00	56	1-101-884-00	390	1-102-822-00	0.0068	1-102-127-00
9	1-102-946-00	62	1-101-886-00	430	1-102-823-00	0.0082	1-102-128-00
10	1-102-947-00	68	1-101-888-00	470	1-102-824-00	0.01	1-102-129-00
11	1-102-948-00	75	1-101-890-00	510	1-101-059-00	0.022	1-101-005-00
12	1-102-949-00	82	1-102-971-00	560	1-102-115-00	0.047	1-101-006-00
13	1-102-950-00	91	1-102-972-00	680	1-102-116-00		
15	1-102-951-00	100	1-102-973-00	820	1-102-117-00		
16	1-102-952-00	110	1-102-815-00				
18	1-102-953-00	120	1-102-816-00				
20	1-102-958-00	130	1-101-081-00				

0.001μF = 1,000pF

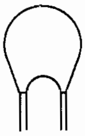
CERAMIC (SEMICONDUCTOR) CAPACITORS

			RATING	→ : Use the high voltage rated one.	
CAP. (μF)	25 VOLT.	50 VOLT.	CAP. (μF)	25 VOLT.	50 VOLT.
	PART No.	PART No.		PART No.	PART No.
0.001	→	1-161-039-00	0.018	1-161-016-00	1-161-054-00
0.0012	→	1-161-040-00	0.022	1-161-017-00	1-161-055-00
0.0015		1-161-041-00	0.027	1-161-018-00	1-161-056-00
0.0018		1-161-042-00	0.033	1-161-019-00	1-161-057-00
0.0022		1-161-043-00	0.039	1-161-010-00	1-161-058-00
0.0027	→	1-161-044-00	0.047	1-161-021-00	1-161-059-00
0.0033	→	1-161-045-00	0.056	→	1-161-060-00
0.0039	→	1-161-046-00	0.068	→	1-161-061-00
0.0047	→	1-161-047-00	0.082	1-161-024-00	1-161-062-00
0.0056	→	1-161-048-00	0.1	1-161-025-00	1-161-063-00
0.0068	→	1-161-049-00			
0.0082	1-161-012-00	1-161-050-00			
0.01	1-161-013-00	1-161-051-00			
0.012	→	1-161-052-00			
0.015	1-161-015-00	1-161-053-00			

MYLAR CAPACITORS

CAP. (μF)	RATING 50 VOLT. PART No.	100 VOLT. PART No.	200 VOLT. PART No.	CAP. (μF)	50 VOLT. PART No.	100 VOLT. PART No.	200 VOLT. PART No.	CAP. (μF)	50 VOLT. PART No.	100 VOLT. PART No.	200 VOLT. PART No.
0.001	1-108-227-00	1-108-365-00	1-108-409-00	0.01	1-108-239-00	1-108-377-00	1-108-421-00	0.1	1-108-251-00	1-108-389-00	1-108-433-00
0.0012	1-108-351-00	1-108-366-00	1-108-410-00	0.012	1-108-357-00	1-108-378-00	1-108-422-00	0.12	1-108-363-00	1-108-390-00	1-108-434-00
0.0015	1-108-228-00	1-108-367-00	1-108-411-00	0.015	1-108-240-00	1-108-379-00	1-108-423-00	0.15	1-108-252-00	1-108-391-00	1-108-435-00
0.0018	1-108-352-00	1-108-368-00	1-108-412-00	0.018	1-108-358-00	1-108-380-00	1-108-424-00	0.18	1-108-364-00	1-108-392-00	1-108-436-00
0.0022	1-108-230-00	1-108-369-00	1-108-413-00	0.022	1-108-242-00	1-108-381-00	1-108-425-00	0.22	1-108-254-00	1-108-393-00	1-108-437-00
0.0027	1-108-353-00	1-108-370-00	1-108-414-00	0.027	1-108-359-00	1-108-382-00	1-108-426-00	0.27	1-108-854-00	–	–
0.0033	1-108-232-00	1-108-371-00	1-108-415-00	0.033	1-108-244-00	1-108-383-00	1-108-427-00	0.33	1-108-855-00	–	–
0.0039	1-108-354-00	1-108-372-00	1-108-416-00	0.039	1-108-360-00	1-108-384-00	1-108-428-00	0.39	1-108-856-00	–	–
0.0047	1-108-234-00	1-108-373-00	1-108-417-00	0.047	1-108-246-00	1-108-385-00	1-108-429-00	0.47	1-108-857-00	–	–
0.0056	1-108-355-00	1-108-374-00	1-108-418-00	0.056	1-108-361-00	1-108-386-00	1-108-430-00				
0.0068	1-108-237-00	1-108-375-00	1-108-419-00	0.068	1-108-249-00	1-108-387-00	1-108-431-00				
0.0082	1-108-356-00	1-108-376-00	1-108-420-00	0.082	1-108-362-00	1-108-388-00	1-108-432-00				

TANTALUM CAPACITORS



→ : Use the high voltage rated one.

CAP. (μF)	RATING 3.15 VOLT. PART No.	6.3 VOLT. PART No.	10 VOLT. PART No.	16 VOLT. PART No.	20 VOLT. PART No.	25 VOLT. PART No.	35 VOLT. PART No.
0.01					→	→	1-131-396-00
0.015						→	1-131-397-00
0.022						→	1-131-398-00
0.033						→	1-131-399-00
0.047						→	1-131-400-00
0.068					→	→	1-131-401-00
0.1					→	→	1-131-402-00
0.15					→	→	1-131-403-00
0.22					→	→	1-131-404-00
0.33					→	1-131-409-00	1-131-405-00
0.47	–	–	–	–	1-131-412-00	→	1-131-406-00
0.68	–	–	–	1-131-415-00	→	1-131-410-00	1-131-407-00
1.0	–	–	1-131-418-00	–	1-131-413-00	→	1-131-408-00
1.5	–	1-131-421-00	–	1-131-416-00	→	1-131-411-00	1-131-348-00
2.2	1-131-424-00	–	1-131-419-00	–	1-131-414-00	1-131-355-00	1-131-349-00
3.3	–	1-131-422-00	–	1-131-417-00	1-131-362-00	1-131-356-00	1-131-350-00
4.7	1-131-425-00	–	1-131-420-00	1-131-369-00	1-131-363-00	1-131-357-00	1-131-351-00
6.8	–	1-131-423-00	1-131-376-00	1-131-370-00	1-131-364-00	1-131-358-00	1-131-352-00
10	1-131-426-00	1-131-383-00	1-131-377-00	1-131-371-00	1-131-365-00	1-131-359-00	1-131-353-00
15	1-131-390-00	1-131-384-00	1-131-378-00	1-131-372-00	1-131-366-00	1-131-360-00	–
22	1-131-391-00	1-131-385-00	1-131-379-00	1-131-373-00	1-131-367-00		
33	1-131-392-00	1-131-386-00	1-131-380-00	1-131-374-00			
47	1-131-393-00	1-131-387-00	1-131-381-00	–			
68	1-131-394-00	1-131-388-00	–	–			
100	1-131-395-00	–	–	–			

TANTALUM CAPACITORS

CAP. (μF)	RATING 3 VOLT. PART No.	6.3 VOLT. PART No.	10 VOLT. PART No.	16 VOLT. PART No.	20 VOLT. PART No.	35 VOLT. PART No.
0.033						1-131-273-00
0.047						1-131-274-00
0.068						1-131-275-00
0.1						1-131-276-00
0.15						1-131-277-00
0.22			–	–	1-131-262-00	1-131-278-00
0.33			–	–	1-131-263-00	1-131-279-00
0.47			1-131-169-00	–	1-131-264-00	1-131-280-00
0.68			–	1-131-258-00	1-131-265-00	1-131-281-00
1.0			1-131-254-00	–	1-131-266-00	1-131-282-00
1.5		1-131-250-00	–	–	1-131-267-00	1-131-283-00
2.2		–	–	1-131-259-00	1-131-268-00	1-131-284-00
3.3		–	1-131-255-00	–	1-131-269-00	–
4.7		1-131-251-00	1-131-171-00	–	1-131-270-00	–
6.8		–	–	1-131-260-00	1-131-271-00	–
10	–	–	1-131-256-00	–	1-131-272-00	–
15	–	1-131-252-00	–	1-131-261-00		
22	–	–	1-131-257-00	–		
33	1-131-176-00	1-131-253-00	1-131-173-00	–		
47	1-131-288-00	1-131-174-00	–	–		
100	1-131-177-00					

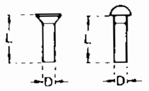
1/4 WATT CARBON RESISTORS

Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.
1.0	1-246-401-00	10	1-246-425-00	100	1-246-449-00	1.0k	1-246-473-00	10k	1-246-497-00	100k	1-246-521-00	1.0M	1-246-545-00
1.1	1-246-402-00	11	1-246-426-00	110	1-246-450-00	1.1k	1-246-474-00	11k	1-246-498-00	110k	1-246-522-00	1.1M	1-210-814-00
1.2	1-246-403-00	12	1-246-427-00	120	1-246-451-00	1.2k	1-246-475-00	12k	1-246-499-00	120k	1-246-523-00	1.2M	1-210-815-00
1.3	1-246-404-00	13	1-246-428-00	130	1-246-452-00	1.3k	1-246-476-00	13k	1-246-500-00	130k	1-246-524-00	1.3M	1-210-816-00
1.5	1-246-405-00	15	1-246-429-00	150	1-246-453-00	1.5k	1-246-477-00	15k	1-246-501-00	150k	1-246-525-00	1.5M	1-210-817-00
1.6	1-246-406-00	16	1-246-430-00	160	1-246-454-00	1.6k	1-246-478-00	16k	1-246-502-00	160k	1-246-526-00	1.6M	1-210-818-00
1.8	1-246-407-00	18	1-246-431-00	180	1-246-455-00	1.8k	1-246-479-00	18k	1-246-503-00	180k	1-246-527-00	1.8M	1-210-819-00
2.0	1-246-408-00	20	1-246-432-00	200	1-246-456-00	2.0k	1-246-480-00	20k	1-246-504-00	200k	1-246-528-00	2.0M	1-210-820-00
2.2	1-246-409-00	22	1-246-433-00	220	1-246-457-00	2.2k	1-246-481-00	22k	1-246-505-00	220k	1-246-529-00	2.2M	1-210-821-00
2.4	1-246-410-00	24	1-246-434-00	240	1-246-458-00	2.4k	1-246-482-00	24k	1-246-506-00	240k	1-246-530-00	2.4M	1-244-754-00
2.7	1-246-411-00	27	1-246-435-00	270	1-246-459-00	2.7k	1-246-483-00	27k	1-246-507-00	270k	1-246-531-00	2.7M	1-244-755-00
3.0	1-246-412-00	30	1-246-436-00	300	1-246-460-00	3.0k	1-246-484-00	30k	1-246-508-00	300k	1-246-532-00	3.0M	1-244-756-00
3.3	1-246-413-00	33	1-246-437-00	330	1-246-461-00	3.3k	1-246-485-00	33k	1-246-509-00	330k	1-246-533-00	3.3M	1-244-757-00
3.6	1-246-414-00	36	1-246-438-00	360	1-246-462-00	3.6k	1-246-486-00	36k	1-246-510-00	360k	1-246-534-00	3.6M	1-244-758-00
3.9	1-246-415-00	39	1-246-439-00	390	1-246-463-00	3.9k	1-246-487-00	39k	1-246-511-00	390k	1-246-535-00	3.9M	1-244-759-00
4.3	1-246-416-00	43	1-246-440-00	430	1-246-464-00	4.3k	1-246-488-00	43k	1-246-512-00	430k	1-246-536-00	4.3M	1-244-760-00
4.7	1-246-417-00	47	1-246-441-00	470	1-246-465-00	4.7k	1-246-489-00	47k	1-246-513-00	470k	1-246-537-00	4.7M	1-244-761-00
5.1	1-246-418-00	51	1-246-442-00	510	1-246-466-00	5.1k	1-246-490-00	51k	1-246-514-00	510k	1-246-538-00	5.1M	1-244-762-00
5.6	1-246-419-00	56	1-246-443-00	560	1-246-467-00	5.6k	1-246-491-00	56k	1-246-515-00	560k	1-246-539-00		
6.2	1-246-420-00	62	1-246-444-00	620	1-246-468-00	6.2k	1-246-492-00	62k	1-246-516-00	620k	1-246-540-00		
6.8	1-246-421-00	68	1-246-445-00	680	1-246-469-00	6.8k	1-246-493-00	68k	1-246-517-00	680k	1-246-541-00		
7.5	1-246-422-00	75	1-246-446-00	750	1-246-470-00	7.5k	1-246-494-00	75k	1-246-518-00	750k	1-246-542-00		
8.2	1-246-423-00	82	1-246-447-00	820	1-246-471-00	8.2k	1-246-495-00	82k	1-246-519-00	820k	1-246-543-00		
9.1	1-246-424-00	91	1-246-448-00	910	1-246-472-00	9.1k	1-246-496-00	91k	1-246-520-00	910k	1-246-544-00		

HARDWARE NOMENCLATURE

Screw:

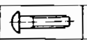
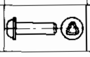
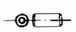
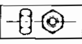
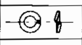
– P 3 x 10
L: *Length in mm*
D: *Diameter in mm*
Type of head
Indicated slotted-head only.
Unless otherwise indicated, it means
cross-recessed head (Phillips type).



Reference Designation	Shape	Description	Remarks
SCREWS			
P		pan-head screw	binding-head (B) screw for replacement
PWH		pan-head screw with washer face	binding-head (B) screw and flat washer for replacement
PS PSP		pan-head screw with spring washer	binding-head (B) screw and spring washer for replacement
PSW PSPW		pan-head screw with spring and flat washers	binding-head (B) screw and spring and flat washers for replacement
R		round-head screw	binding-head (B) screw for replacement
K		flat-countersunk-head screw	
RK		oval-countersunk-head screw	
B		binding-head screw	
T		truss-head screw	binding-head (B) screw for replacement
F		flat-fillister-head screw	
RF		fillister-head screw	
BV		braizer-head screw	

Nut, Washer, Retaining ring:

N 3
Diameter of usable screw or shaft
Reference designation

Reference Designation	Shape	Description	Remarks
SELF-TAPPING SCREWS			
TA		self-tapping screw	ex: TA, P 3 x 10
PTP		pan-head self-tapping screw	binding-head self-tapping (TA, B) screw for replacement
PTPWH		pan-head self-tapping screw with washer face	binding-head self tapping (TA, B) screw and flat washer for replacement
PTTWH		pan-head thread-rolling screw with washer face	binding-head (B) screw and flat washer for replacement
SET SCREWS			
SC		set screw	
SC		hexagon-socket set screw	ex: SC 2.6 x 4, hexagon socket
NUT			
N		nut	
WASHERS			
W		flat washer	
SW		spring washer	
LW		internal-tooth lock washer	ex: LW3, internal
LW		external-tooth lock washer	ex: LW3, external
RETAINING RINGS			
E		retaining ring	
G		grip-type retaining ring	

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